ORDER NO. HAD8604460C8

Service Manual

Cassette Deck

Dolby NR-Equipped Double Cassette Deck

RS-D225W

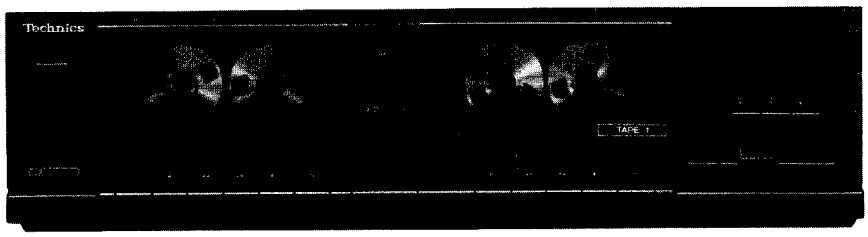
RS-D225W

* DOLBY SYSTEM

Color

(K)...Black Type

Color	Areas
(K)	[E].....All European areas except United Kingdom.
(K)	[EK].....United Kingdom.
(K)	[EH].....Holland.
(K)	[EGA]....F.R. Germany.
(K)	[EB].....Belgium.
(K)	[XA].....Asia, Oceania, Latin America, Middle Near East and Africa.
(K)	[XL].....Australia.



RS-D550W MECHANISM SERIES

SPECIFICATIONS

Deck system Stereo cassette deck
Track system 4-track, 2-channel
Heads
(TAPE 1) PLAY Solid Permaloy head
(TAPE 2) REC/PLAY Solid Permaloy head
(TAPE 2) Erasing Double-gap ferrite head
Motors
(TAPE 1) Capstan/reel table drive
2 speed electronically controlled DC motor
(TAPE 2) Capstan/reel table drive
2 speed electronically controlled DC motor
Recording system AC bias
Bias frequency 80kHz
Tape speed 4.8cm/sec. (1-7/8ips)
Frequency response (w/o Dolby N.R.)
METAL 20Hz~16kHz
30Hz~15kHz (DIN)
CrO_2 20Hz~15kHz
30Hz~15kHz (DIN)
NORMAL 20Hz~15kHz
30Hz~15kHz (DIN)
S/N (signal level=max. recording level, CrO_2 type tape)
Dolby NR in 66dB (CCIR)
NR out 56dB (A weighted peak)

Wow and flutter 0.08% (WRMS)
±0.2% (DIN)
Fast forward and rewind time
Approx. 105 seconds with C-60 cassette tape
Input sensitivity and impedance
LINE 60mV/47kΩ
Output voltage and impedance
LINE 400mV/1.5kΩ

■ GENERAL

Power consumption 18W
Dimensions (W×H×D) 430×115×227 mm
(16-15/16"×4-1/2"×9-1/32")
Weight 3.4kg (7.5lb.)

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ CONTENTS

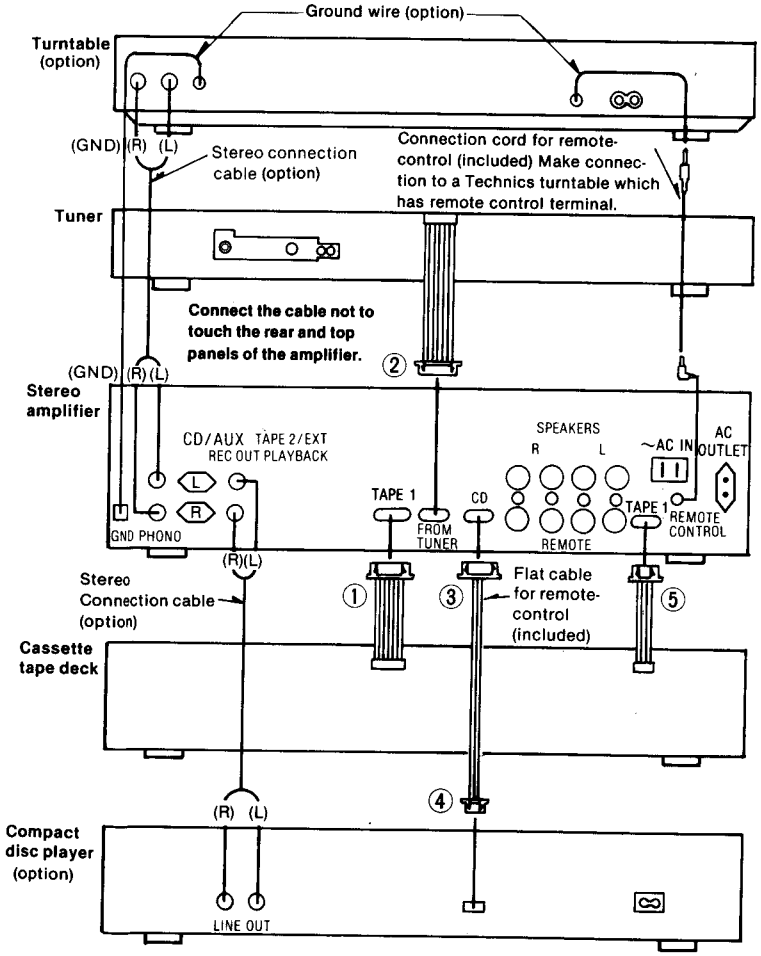
	Page
• How To Connect	2
• Location of Controls	3
• Operation	4~6
• Disassembly Instructions	7
• Information on Power Supply Jig	8
• Measurement and Adjustment Methodes	9, 10
• Microcomputer Terminal Function and Waveform	11, 12
• Wiring Connection Diagram	13, 14
• Printed Circuit Boards	15~17
• Resistors and Capacitors	18
• Block Diagram	19, 20
• Electrical Parts List	21
• Schematic Diagram	21~24
• Mechanical Parts Location	25, 26
• Cabinet Parts Location	27, 28

■ HOW TO CONNECT

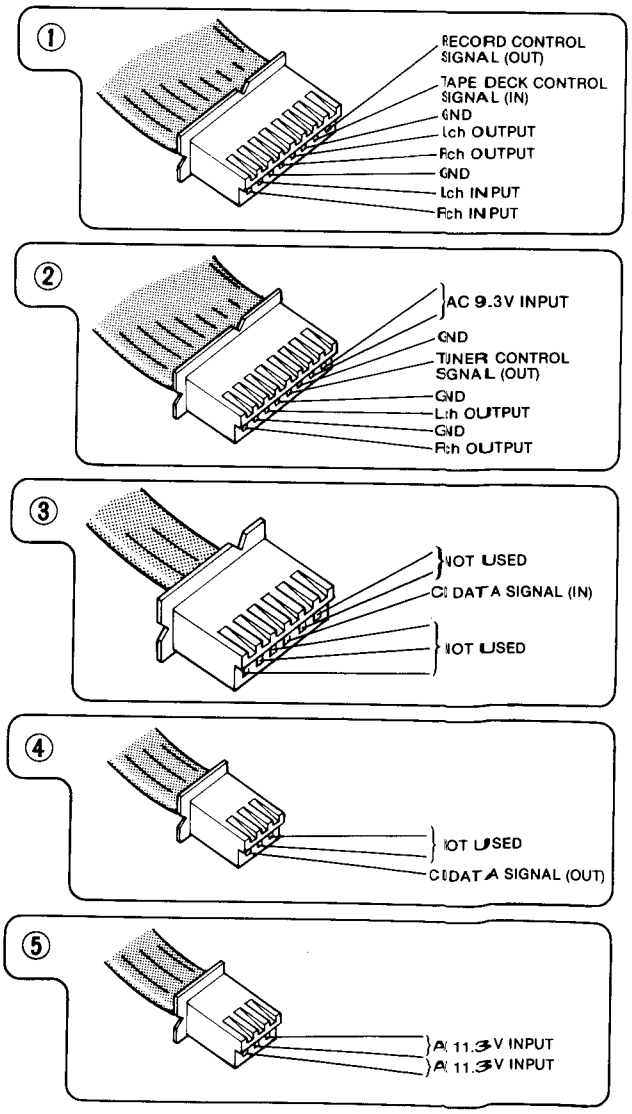
Connect the turntable, tuner, amplifier, cassette deck, and CD player as shown.

If the connection is wrong, normal operation will not be attalbed.

Tuner (ST-Z990/Z990L) and Cassette deck (RS-D225W) is not equipped with power supply. So, the amplifier shown or power supply JIG is necessary for the repair and check of Tuner or Cassette deck.



※ Flat cables for remote-control should be connected correctly. If connections are wrong, the units do not function correctly.



ORDER NO. HAD8604460C8-A

Dolby NR-Equipped Double Cassette Deck

RS-D225W

DEUTSCH

DEUTSCH

■ MESSUNGEN UND JUSTIERUNGEN

Meßinstrumente

- Elektronisches Voltmeter (EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Kopfazimut-Justierung (TAPE 1. 2)

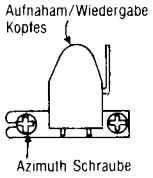


Abb. 2

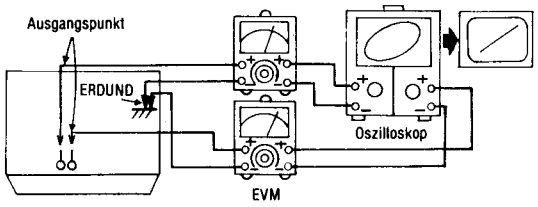


Abb. 1

1. Die Anschlußverbindungen für die Testgeräte sind in Abb. 1 gezeigt.
2. Den Azimut-Justierungsteil (8kHz, −20dB) des Testbandes (QZZCFM) wiedergeben und die Winkeljustierungs-Einstellschraube so verstellen, daß der Ausgang vom linken und rechten Kanal maximal wird. (Wenn die Justierpositionen für den linken und rechten Kanal verschieden sind, ist eine Position zu finden, wo der Ausgang des linken und rechten Kanals ausgelichen ist, und dann ist die Justierung durchzuführen.)
3. Gleichzeitig eine Lissajous-Wellenform ziehen und Phasenablenkung eliminieren.
4. Nach erfolgter Justierung sind die Bandführungs-Höhen-und-Winkeljustierschrauben zu sichern.

Bandgeschwindigkeits-Justierung (TAPE 1. 2)

Normalgeschwindigkeit

1. Der Testaufbau ist in Abb. 3 gezeigt.
2. Den mittleren Teil des Testbandes (QZZCWAT) wiedergeben.
3. Den Drehwiderstand 904 für TAPE [1] und den Drehwiderstand 903 für TAPE [2] so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.

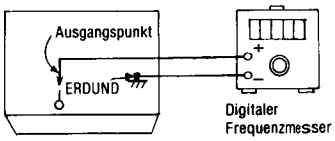


Abb. 3

Hohe Geschwindigkeit

4. Den kopiergeschwindigkeits-Wahlschalter auf "×2" stellen und TAPE 1: TP1 und TPN1 sowie TAPE 2: TP2 und TPN2 kurzschließn.
5. Den mittleren Teil des Testbandes (QZZCWAT) wiedergeben.
6. Den Drehwiderstand 902 für TAPE [1] und den Drehwiderstand 901 für TAPE [2] so justieren daß die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 3000±20Hz (Normal), 6000±40Hz (High)

Wiedergabe-Frequenzgang (TAPE 1. 2)

1. Der Testaufbau ist in Abb. 4 gezeigt.
2. Den Wiedergabe-Frequenzgangteil (315Hz, 12,5kHz~63Hz, −20dB) des Testbandes (QZZCFM) wiedergeben.
3. Überprüfen, ob der Frequenzgang innerhalb des in Abb. 5 für den linken und rechten Kanal gezeigten Bereichs liegt.

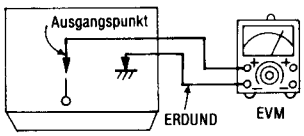


Abb. 4

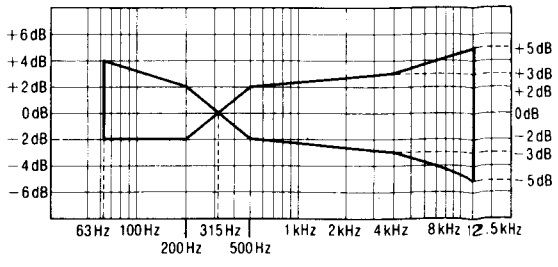


Abb. 5

Justierung des Wiedergabe-Verstärkungsgrades (TAPE 1. 2)

1. Der Testaufbau ist in Abb. 4 gezeigt.
2. Den für den Wiedergabe-Verstärkungsgrad justierten Teil (315Hz, 0dB) des Testbandes (QZZCFM) wiedergeben.
3. Den Drehwiderstand 1, (linker Kanal) {Drehwiderstand 2 (rechter Kanal)} für TAPE [1] und den Drehwiderstand 3, (linker Kanal) {Drehwiderstand 4 (rechter Kanal)} für TAPE [2] so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 0,4V±0,5dB (0,02V)

Gesamtfrequenzgang (TAPE 2)

1. Der Testaufbau ist in Abb. 6 gezeigt, eine kurzschlußbrücke an TP6 legen.
2. Eine Normalband-Leercassette (QZZCRA) einsetzen und aufnehmen, während ein Signal von nacheinander 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, und 10kHz bei 20dB, abgeschwächt vom Referenz-Eingangspegelsignal (1kHz, −24dB) eingegeben wird.

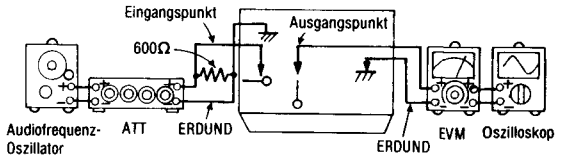


Abb. 6

3. Das in Schritt 2 aufgezeichnete Signal wiedergeben und prüfen, ob der Pegel jeder Ausgangsfrequenz im Bereich liegt, der in Abb. 7 im Vergleich zur Referenzfrequenz (1kHz) gezeigt wird.
4. Falls er nicht im Standard-Bereich liegt, ist der Vormagnetisierungsstrom mit Drehwiderstand 301 (linker Kanal) {Drehwiderstand 302 (rechter Kanal)} so zu justieren, daß der Frequenzpegel innerhalb des Standards zu liegen kommt.
   - Erhöhter Pegel im Frequenzbereich.....Den Vormagnetisierungsstrom erhöhen.
   - Reduzierter Pegel im Frequenzbereich.....Den Vormagnetisierungsstrom senken.
5. Anschließend das auf der CrO2-Leerband-Cassette (QZZCRX) und der Reineisenband-Leercassette (QZZCRZ) aufgezeichnete Signal auf 12,5kHz erhöhen und auf gleiche Weise justieren, wie vorgehend beschrieben. Dann überprüfen, ob der Frequenzpegel innerhalb des in Abb. 8 gezeigten Bereichs liegt.
6. Nach der Justierung ist die kurzschlußbrücke von TP6 zu trennen.

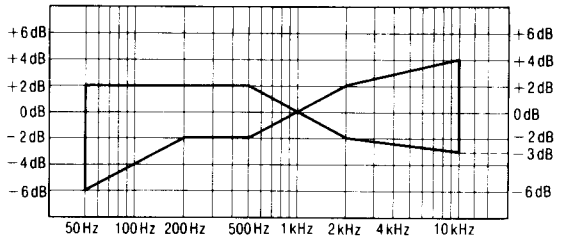


Abb. 7

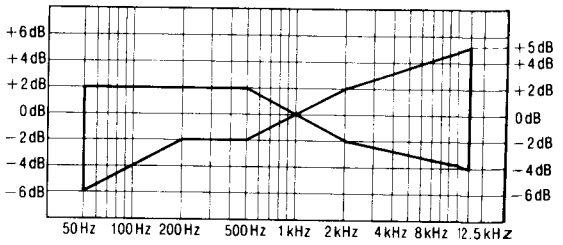


Abb. 8

Justierung des Gesamtverstärkungsgrades (TAPE 2)

1. Der Testaufbau ist in Abb. 6 gezeigt, eine kurzschlußbrücke an TP6 legen.
2. Eine Normalband-Leercassette (QZZCRA) einsetzen und im Aufnahmepause-Zustand des Gerätes das Referenzsignal (1kHz, −24dB) eingeben.
3. Die Ausgangsleistung mit dem Dämpfungswiderstand auf 0.4V justieren und dann aufnehmen.
4. Das in Schritt 3 aufgezeichnete Signal wiedergeben und überprüfen, ob die Ausgangsleistung dem Standard-Wert entspricht.
5. Falls sie nicht dem Standard-Wert entspricht, ist der Drehwiderstand 7 (linker Kanal) {Drehwiderstand 8 (rechter Kanal)} zu justieren, und dann sind die Schritte (2), (3) und (4) zu Wiederholen, bis die Ausgangsleistung dem Standard-Wert entspricht.
6. Nach der Justierung ist die kurzschlußbrücke von TP6 zu trennen.

Standard-Wert: $0{,}4^{+0{,}1}_{-0{,}08}$ V

Dolby-Rauschunterdrückungs-Schaltkreis

1. Der Testaufbau ist in Abb 9 gezeigt.
2. Eine Normalband-Cassette einsetzen und im Aufnahmepause-Zustand des Gerätes ein 5kHz-Signal eingeben.
3. Mit dem Dämpfurgswiderstand so justieren, daß die Ausgangsleistung zwischen Anschluß ⑥ (linker Kanal) {Anschluß ⑲ (rechter Kanal)} des IC401 und Masse 12,3mV beträgt.
4. Den Rauschunterdrückungs-Schalter (NR) einschalten und prüfen, ob der Pegel wie vorgeschrieben gegenüber dem Pegel im rauschunterdrückungsfreien Zustand verändert wird.

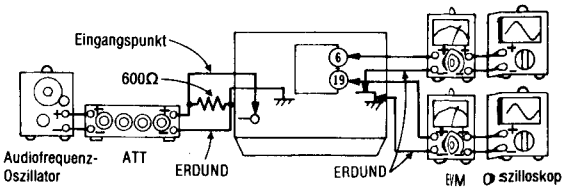


Abb. 9

Standard-Wert: 8±1,5dB

FRANÇAIS

■ MESURAGES ET REGLAGES

Appareils de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T. (Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Réglage de l'angle des têtes de lecture (BANDE 1. 2)

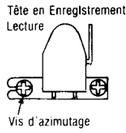


Fig. 2

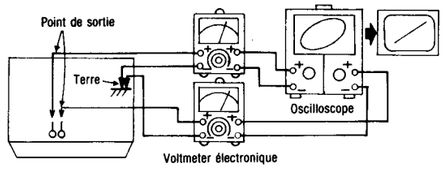


Fig. 1

1. Le raccordement de l'équipement d'essai est montré à la Fig. 1.
2. Faire jouer la partie réglée azimutale (8kHz, −20dB) de la bande d'essai (QZZCFM) et. régler la vis de mise au point azimutale de telle sorte que les puissances de sortie du canal de gauche et du canal de droite soient au maximum.
   (Si les positions de réglage du canal de gauche et du canal de droite sont différentes, trouver une position où les puissances de sortie des canaux de gauche et de droite soient équilibrées, puis effectuer la mise au point.)
3. En même temps, établir une forme d'onde de Lissajous et éliminer la déviation de phase.
4. Aprés le réglage, bloquer les vis du réglage angulaire et de la hauteur des guides de bande.

Réglage de la vitesse de défilement de la bande (BANDE 1. 2)

Vitesse de défilement normale

1. Le raccordement de L'équipement d'essai est montré à la Fig. 3.
2. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
3. Régler La BANDE [1]: VR904 et la BANDE [2]: VR903 de telle sorte que la puissance de sortie soit en peçà de la normale.

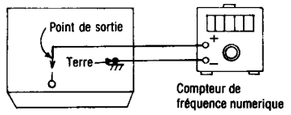


Fig. 3

Vitesse de défilement élevée

4. Régler le commutateur de vitesse du montage sur "×2" et court-circuiter la BANDE [1]; TP1 et TPN1 et la BANDE [2]; TP2 et TPN2.
5. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
6. Régler La BANDE [1]: VR902 et la BANDE [2]: VR901 de telle sorte que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: 3000±20Hz (Normale), 6000±40Hz (Elevée)

Réponse en fréquence de la lecture (BANDE 1. 2)

1. Le raccordement de l'équipment d'essai est montré à la Fig. 4.
2. Faire jouer la partie de la réponse en fréquence de la lecture (315Hz, 12,5kHz~63Hz, −20dB) de la bande d'essai (QZZCFM).
3. Vérifier que la fréquence soit en deçà de la plage montrée à la Fig. 5, à la fois pour le canal de gauche et le canal de droite.

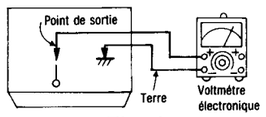


Fig. 4

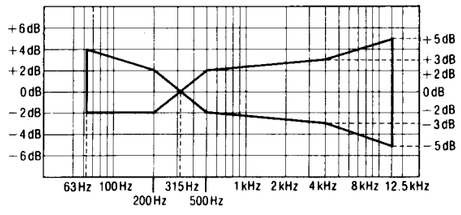


Fig. 5

Réglage d'amplification de la lecture (BANDE 1. 2)

1. Le raccordement de l'équipement d'essai est montré à la Fig. 4.
2. Faire jouer la partie réglée d'amplification de la lecture (315Hz, 0dB) de la bande d'essai (QZZCFM).
3. Régler la BANDE [1]: VR1 (canal de gauche) [VR2 (canal de droite)] et la BANDE [2]: VR3, (canal de gauche) [VR4 (canal de droite)] de telle sorte que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: 0,4±0,5dB (0,02V)

Réponse en fréquence globale (BANDE 2)

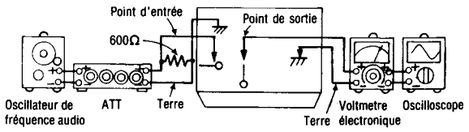


Fig. 6

1. Le raccordement de l'équipement d'essai est montré à la Fig. 6, Raccorder un fil de connexion à TP6.
2. Installer une bande vierge normale (QZZCRA) et enregistrer en appliquant un signal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz et 10kHz) de 20dB atténués provenant du signal du niveau d'entrée de référence (1kHz, −24dB).
3. Faire jouer le signal enregistré à l'étape 2 et vérifier que le niveau de chaque fréquence de sortie soit en deçà de la plage montrée à la Fig. 7 en comparaison avec la fréquence de référence (1kHz).
4. S'il n'est pas en deçà de la plage standard, régler le courant de polarisation avec VR 301 (canal de gauche) [VR302 (canal de droite)], de telle sorte que le niveau de fréquence soit en deçà de la normale.
   • Niveau vers la haut dans la plage de fréquence élevée.....Augmenter le conrant de polarisation.
   • Niveau vers le bas dans la plage de fréquence élevée.....Diminuer le courant de polarisation.
5. Aprés cela, amplifier le signal enregistré sur la bande vierge CrO2 (QZZCRX) et la bande vierge métallisée (QZZCRZ) jusqu'à 12,5kHz et régler de la même manièree que celle mentionné ci-dessus. Puis, vérifier que le niveau de fréquence soit en deçà de la plage montrée à la Fig. 8.
6. Après le réglage, couper le fil de connexion de TP6.

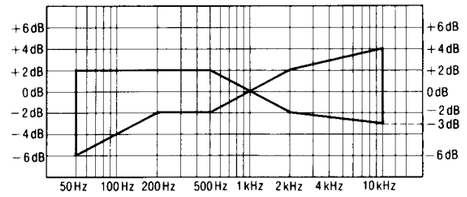


Fig. 7

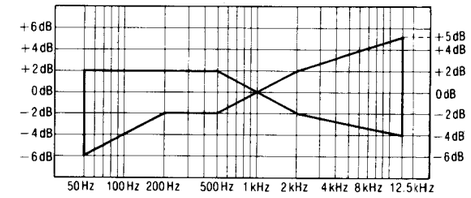


Fig. 8

Réglage d'amplification globale (BANDE 2)

1. Le raccordement de l'équipement d'essai est montré à la Fig. 6, Raccorder un fil de connexion à TP6.
2. Installer une bande vierge normale (QZZCRA) et appliquer le signal de niveau d'entrée de référence (1kHz, −24dB) sur le mode d'intermission d'enregistrement.
3. Régler la puissance de sortie 0.4V avec L'atténuateur, puis enregistrer.
4. Faire jouer le signal enregistré à l'étape 3 et vérifier que la puissance de sortie soit en deçà de la normale.
5. Si elle n'est pas en deçà de la normale, régler VR7 (canal de gauche) [VR8 (canal de droite)] et répéter les étapes (2), (3) et (4) jusqu'à ce que la puissance de sortie soit en deçà de la normale.
6. Après le réglage, couper le fil de connexion de TP6.

Valeur normalisée: $0.4^{+0,1}_{-0,08}$ V

Circuit de réduction des bruits Dolby

1. Le raccordement de l'équipement d'essai est montré à la Fig. 9.
2. Installer une bande normale et appliquer un signal de 5kHz sur le mode d'intermission d'enregistrement.
3. Régler avec l'atténuateur de telle sorte que la puissance de sortie entre la borne ⑥ (canal de gauche) [borne ⑲ (canal de droite)] de IC401 et la masse soit de 12,3mV.
4. Mettre en marche le commutateur de réduction des bruits et vérifier que le niveau change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.

Valeur normalisée: 8±1,5dB

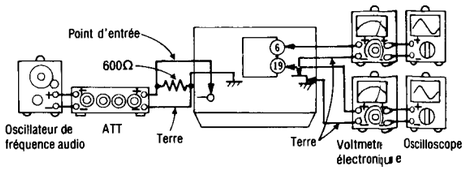


Fig. 9

ESPAÑOL

ESPAÑOL

■ MEDICIONES Y AJUSTE

Instrumento de medición

- EVM (Voltimetro electrónico)
- Osciloscopio
- Frecuencimetro digital
- Oscilador AF
- ATT (Atenuador)
- Voltimetro CC
- Resistor (600Ω)

Ajuste acimutal de cabeza (CINTA 1. 2)

1. La conexión del equipo de prueba se muestra en la Fig. 1.
2. Reproducir la parte ajustada de acimut (8kHz, −20dB) de la cinta de prueba (QZZCFM) y regular el tornillo de ajuste de ángulo de manera que las salidas de CH-I y CH-D sean maximizadas.
   (Cuando las posiciones de ajuste sean diferentes de CH-I y CH-D, encontrar una posición donde las salidas de CH-I y CH-D estén equilibradas y, luego, hacer el ajuste.)
3. Al mismo tiempo, trazar una forma de onda de Lissajous y eliminar la deflexión de fase.
4. Después del ajuste, fije los tornillos de ajuste de altura y ángulo de guía de cinta.

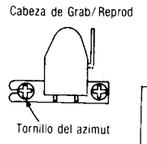


Fig. 2

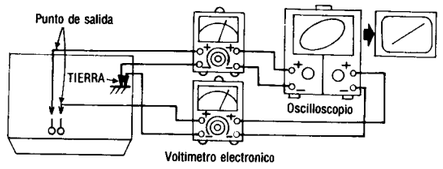


Fig. 1

Ajuste de velocidad de cinta (CINTA 1. 2)

Velocidad normal

1. La conexión del equipo de prueba se muestra en la Fig. 3
2. Reproducir la parte media de la cinta de prueba (QZZCWAT).
3. Ajustar La CINTA [1]: RV904 y la CINTA [2]: RV 903 de manera que la salida esté dentro del la estandard.

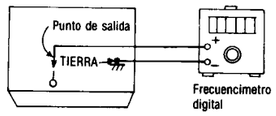


Fig. 3

Alta velocidad

4. Ajuste el conmutador de velocidad de montaje en "×2" y ponga en cortocicuito la CINTA 1; TP1 y TPN1 y la CINTA 2; TP2 y TPN2.
5. Reproducir la parte media de la cinta de prueba (QZZCWAT).
6. Ajustar La CINTA [1]: RV902 y la CINTA [2]: RV901 de manera que la salida esté dentro de la estandard.

Valor estandard: 3000±20Hz (Normal), 6000±40Hz (Alto)

Respuesta de frecuencia de reproducción (CINTA 1. 2)

1. La conexión del equipo de prueba se muestra en la Fig. 4.
2. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12,5kHz~63Hz, −20dB) de la cinta de prueba (QZZCFM).
3. Comprobar que la frecuencia esté dentro de la gama mostrada en la Fig. 5 tanto para CH-I como para CH-D.

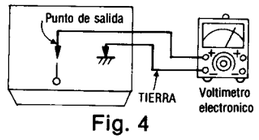


Fig. 4

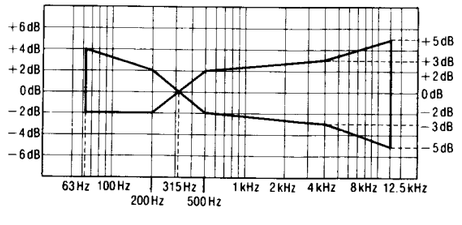


Fig. 5

Ajuste de ganancia de reproducción (CINTA 1. 2)

1. La conexión del equipo de prueba se muestra en la Fig. 4.
2. Reproducir la parte ajustada de la ganancia de reproducción (315Hz, 0dB) de la cinta de prueba (QZZCFM).
3. Ajustar la CINTA [1]: RV1 (CH-I) {RV2 (CH-D)} y la CINTA [2]: RV3, (CH-I) {RV4 (CH-D)} de manera que la salida esté dentro de la estandard.

Valor estandard: 0,4±0,5dB (0,02V)

Respuesta de frecuencia total (CINTA 2)

1. La conexión del equipo de prueba se muestra en la Fig. 6, Conectar un hilo de puente de TP6.
2. Colocar una cinta virgen normal (QZZCRA) y grabar aplicando señal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz y 10kHz), 20dB atenuada de la señal de nivel de entrada de referencia (1kHz, −24dB).
3. Reproducir la señal grababa en el paso 2 y comprobar que el nivel de cada frecuencia de salida esté dentro de la gama mostrada en la Fig. 7 en comparación con la frecuencia de referencia (1kHz).
4. Si no está dentro de la gama estandard, ajustar la corriente de polarización mediante RV301 (CH-I) {RV302 (CH-D)} de manera que el nivel de frecuencia esté dentro del estandard.
   • Subir el nivel en la gama de alta frecuencia..... Incrementar la corriente de polarización.
   • Bajar el nivel en la gama de alta frecuencia..... Disminuir la corriente de polarización.
5. Después de eso, incrementar la señal grabada en la cinta virgen CrO2 (QZZCRX) y la cinta virgen metálica (QZZCRZ) hasta 12,5kHz y ajustar de la misma manera como mencionado arriba y comprobar que el nivel de frecuencia esté dentro de la gama mostrada en la Fig. 8.
6. Después del ajuste, cortar un hilo de puente de TP6.

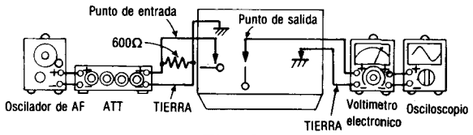


Fig. 6

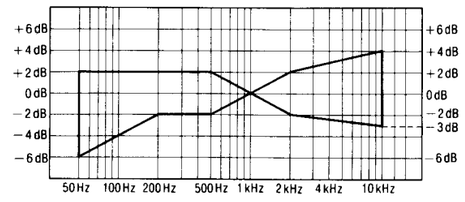


Fig. 7

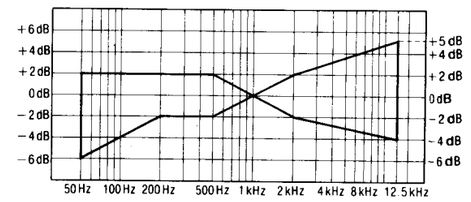


Fig. 8

Ajuste de ganancia total (CINTA 2)

1. La conexión del equipo de prueba se muestra en la Fig. 6, Conectar un hilo de puente de TP6.
2. Colocar una cinta virgen normal (QZZCRA) y aplicar la señal de nivel de entrada de referencia (1kHz, −24dB) en la modalidad de pausa de grabación.
3. Ajustar la salida 0.4V mediante atenuador y, luego, grabar.
4. Reproducir la señal grabada en el paso 3 y comprobar que la salida esté dentro de la estandard.
5. Si no está dentro de la estandard, ajustar RV7 (CH-I) {RV8 (CH-D)} y repetir el paso (2), (3) y (4) hasta que la salida esté dentro de la estandard.
6. Después del ajuste, cortar un hilo de puente de TP6.

Valor estandard: $0{,}4^{+0{,}1}_{-0{,}08}$ V

Circuito RR Dolby

1. La conexión del equipo de prueba se muestra en la Fig. 9.
2. Colocar una cinta normal y aplicar señal 5kHz en la modalidad de pausa de grabación.
3. Ajustar mediante atenuador de manera que la salida entre terminal ⑥ (CH-I) {terminal ⑲ (CH-D)} de IC401 y tierra sea 12,3mV.
4. Prender el interruptor RR y comprobar que el nivel cambia como especificado por el nivel en la modalidad de salida RR.

Valor estandard: 8±1,5dB

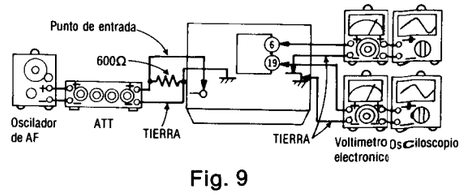
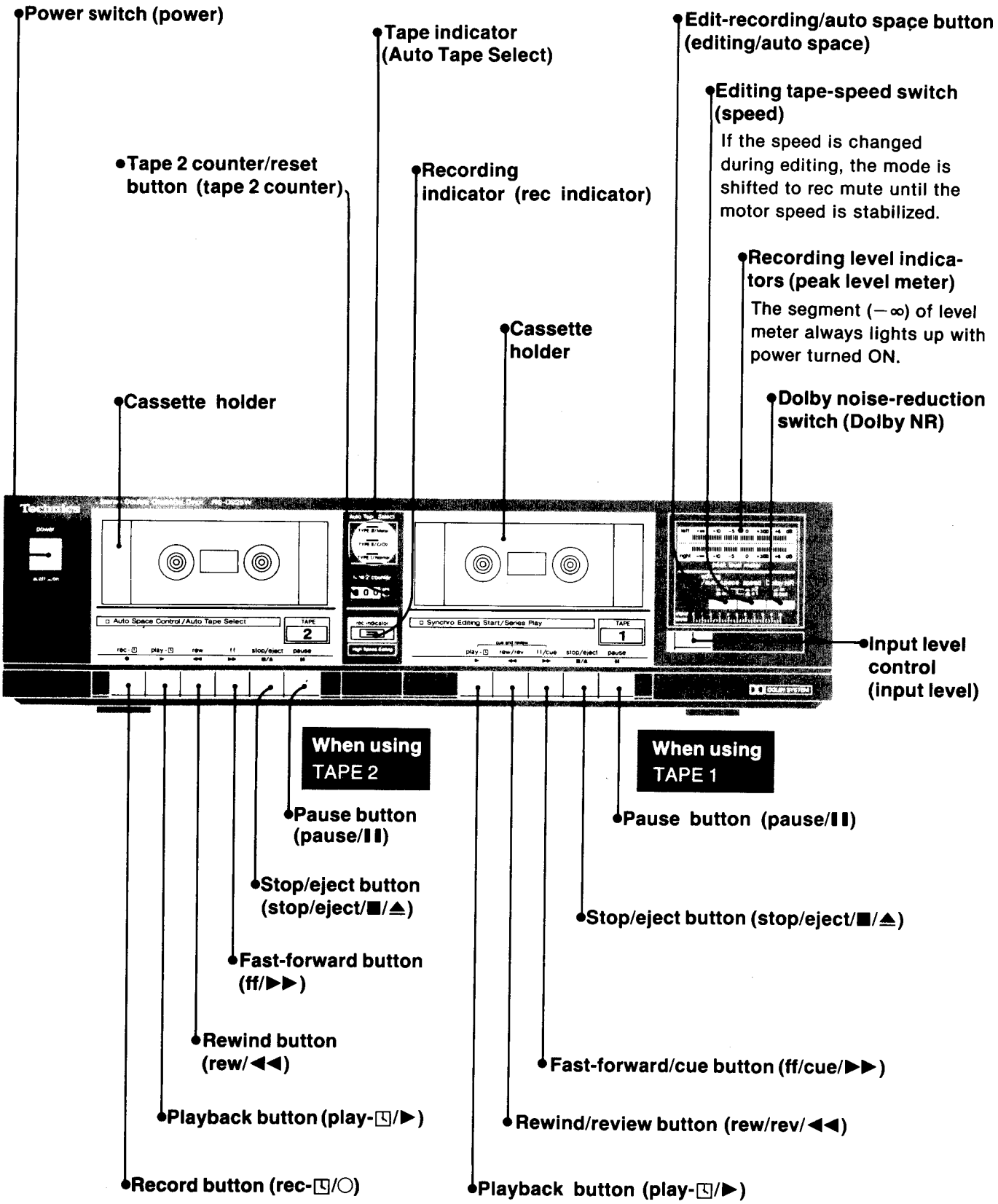


Fig. 9

Printed in Japan
86040670( ) A.H. M.S.

■ LOCATION OF CONTROLS


•Power switch (power)
•Tape indicator (Auto Tape Select)
•Edit-recording/auto space button (editing/auto space)
•Editing tape-speed switch (speed)
If the speed is changed during editing, the mode is shifted to rec mute until the motor speed is stabilized.
•Tape 2 counter/reset button (tape 2 counter)
•Recording indicator (rec indicator)
•Recording level indicators (peak level meter)
The segment (−∞) of level meter always lights up with power turned ON.
•Cassette holder
•Cassette holder
•Dolby noise-reduction switch (Dolby NR)
•Input level control (input level)
When using TAPE 2
When using TAPE 1
•Pause button (pause/❚❚)
•Pause button (pause/❚❚)
•Stop/eject button (stop/eject/■/⏏)
•Stop/eject button (stop/eject/■/⏏)
•Fast-forward button (ff/▶▶)
•Rewind button (rew/◀◀)
•Fast-forward/cue button (ff/cue/▶▶)
•Playback button (play-⊡/▶)
•Rewind/review button (rew/rev/◀◀)
•Record button (rec-⊡/○)
•Playback button (play-⊡/▶)

■ OPERATION

To Listen to Tapes

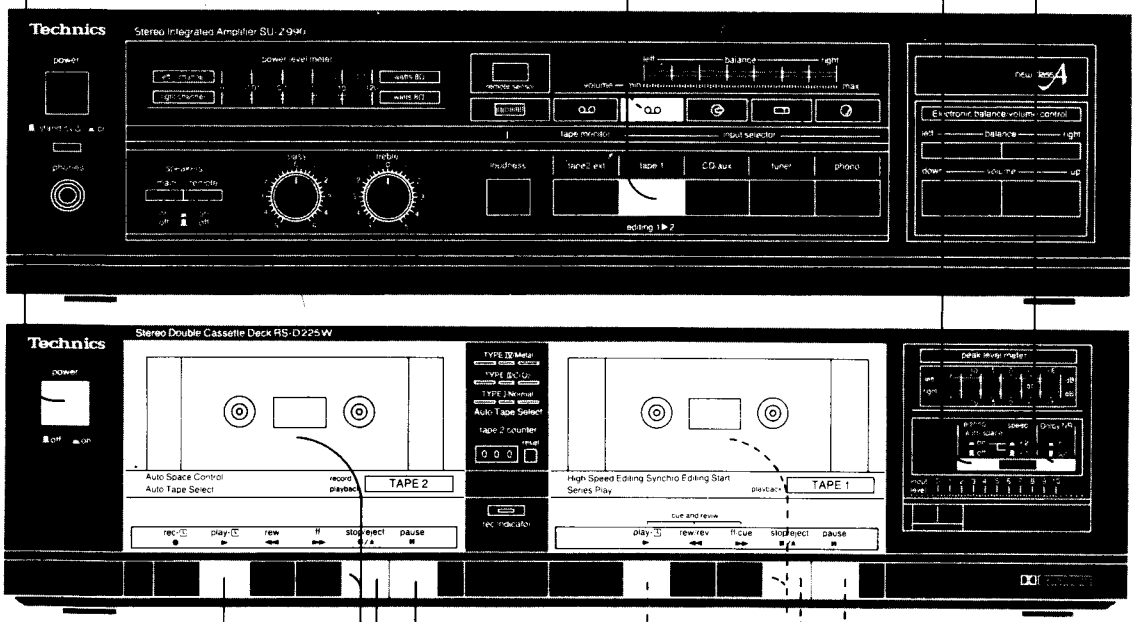
1 "out" (▬→ ▮):
Playing back tapes which were not recorded through the Dolby noise-reduction system.

"in" (▮→ ▬):
Playing back tapes which were recorded through the Dolby noise-reduction system

2 "off" (▬→ ▮)

3 "tape 1"
(The indicator will illuminate.)

4 Power: "on" (▮→ ▬)



Amplifier (SU-Z990)

Tape deck (RS-D225W)

When using TAPE 2

- Press to stop the tape temporarily.
- Press to stop the tape.

5 Press, then insert the tape cassette.

6 Press.
(Playback will begin.)

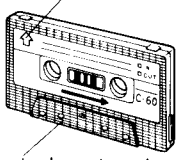
When using TAPE 1

- Press to stop the tape temporarily.
- Press to stop the tape.

5 Press, then insert the tape cassette.

6 Press.
(Playback will begin.)

The side to be played back facing outward.



Part where tape is exposed facing downward.

7 Adjust the volume level and the desired tone quality.

If the tape does not run in step 6 (For TAPE 1 and TAPE 2)
Press the "play" button on the remote-control transmitter.

Note:
TAPE 2 cannot be used for fast forward or rewind operations while TAPE 1 is being used for playback, although TAPE 1 can be used for fast forwarding and rewinding while TAPE 2 is being used for playback.

To playback the tape by using the remote-control transmitter

1. **Press the playback button of cassette deck.**
2. **Press the "play" button on the remote-control transmitter.**

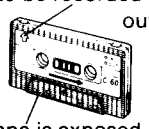
- **To stop the playback temporarily:**
  Press the "stop" button on the remote-control transmitter. To start the playback again, press the "play" button on the remote-control transmitter.

Recording

Note:
Only TAPE 2 can be used for recording. TAPE 1 has no record capability.

To make non-recorded spaces between tunes
With this unit, by following the steps below, it is possible to make non-recorded spaces (four seconds long) between tunes.
- Press the edit-recording/auto space button.
  (After about 4 seconds, the deck will automatically change to the recording stand-by mode. To resume the recording, set the button to the "off" position.)

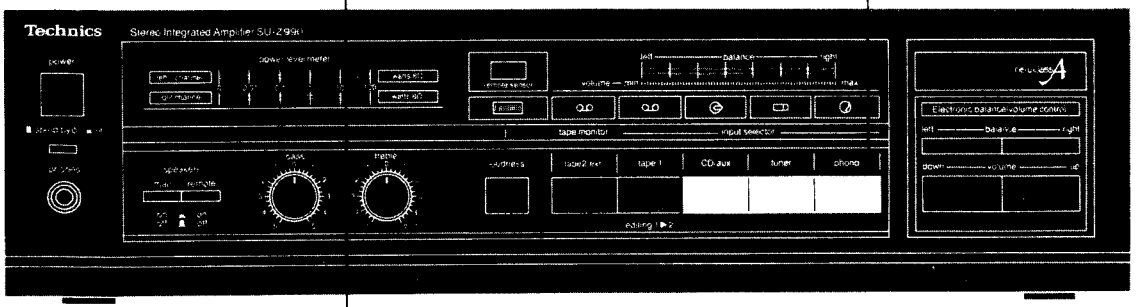
2 Press, then insert the tape cassette.
The side to be recorded facing outward.



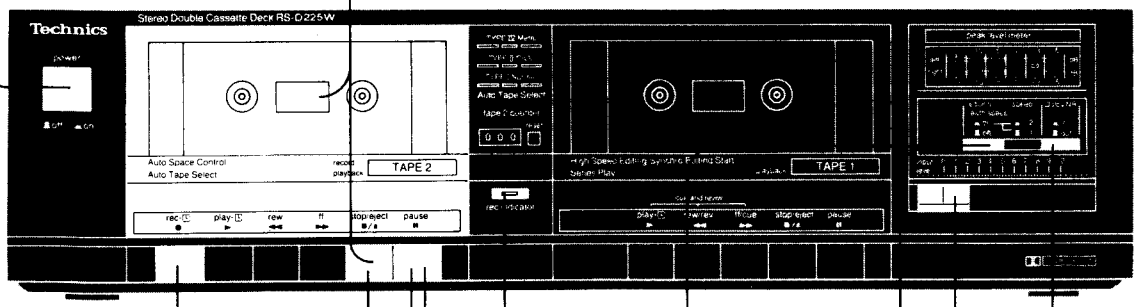
Part where tape is exposed facing downward.

3 Power: "on" (■→ ▬)

1 Select the sound source.



Amplifier (SU-Z990)



Tape deck (RS-D225W)

Press to stop the recording.

Recording indicator

Press to make non-recorded spaces between tunes.

4 "out" (▬→ ■):
Tape recording without the Dolby NR system.
"in" (■→ ▬):
Tape recording with the Dolby NR system.

6 Press.

Press the button to stop the recording temporarily.

5 "off" (▬→ ■)

7 Press.
(Recording stand-by mode)
(The recording indicator will be illuminated.)

8 Start the desired program source.

9 Adjust the recording level.

When the recording level cannot be adjusted
The recording level might not be adjustable when the stop button on the remote-control transmitter is pressed.
If this happens, press the "play" button on the remote-control transmitter.

10 Press.
(Recording will begin.)

To record by using the remote-control unit

1. **Press the "rec" button on the deck itself.**
2. **Press the "play" button on the remote-control unit.**

- **To stop the recording temporarily:**
  Press the "stop" button on the remote-control unit.
  (After about 4 seconds, the deck will automatically change to the recording stand-by mode.)

To start the recording again, press the "play" button on the remote-control unit.

Adjustment of the recording level

The numbers which you should use as a guide for the adjustment of the tape level will differ depending upon the type of tape.

Normal Tape CrO_2 Tape	Metal Tape
+3 dB	+6 dB

Dolby noise-reduction systems

Because the level of tape noise is a fixed level, such noise is more easily heard as the level of the music signals becomes lower. Thus, when a recording is made, low levels are recorded at a high level, and, when this recording is played back, it is played back, conversely, at a low level.
Because the tape noise will also be then played back at a low level, the result is a reduction in the noise level.

- Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Automatic tape selector system

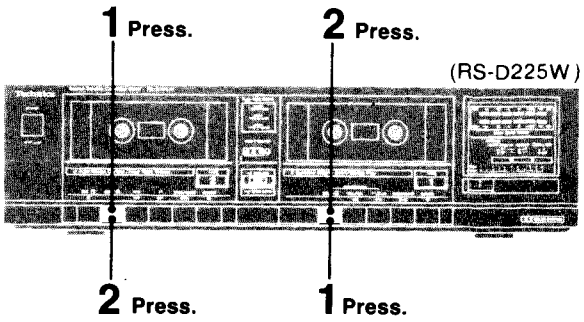
This cassette deck automatically detects the type of tape being used, and adjusts for the proper bias and equalization.

When tape deck 2 is used, the tape indicator illumination will correspond to the type of tape used in tape deck 2.

Series playback

Playback is continuous from tape deck 1 to tape deck 2 (or from tape deck 2 to tape deck 1).

When starting from tape deck 2



When starting from tape deck 1

Edit-Recording

- The remote-control unit cannot be used for tape operation during edit recording.
- **To make non-recorded space** (about four seconds long) between tunes, press the stop button for tape deck 1. (The restart of the recording can be started by pressing the playback button once again.)

Preparations for recording

1 **Power: "on" (■→▬)**

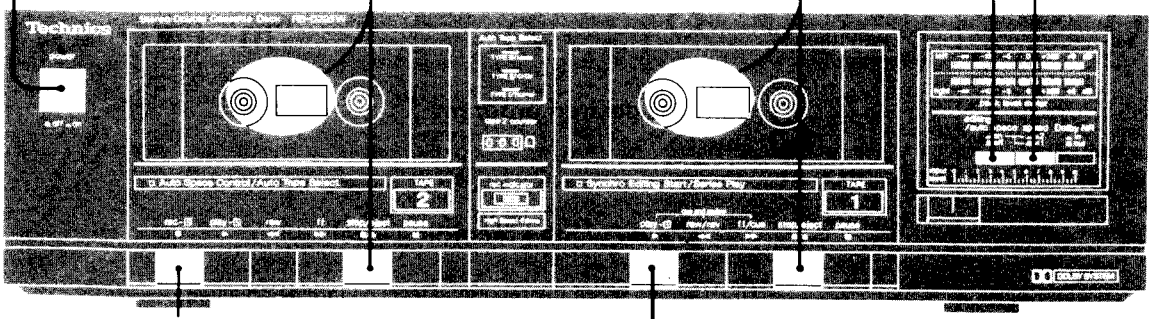
2 **Press, then insert the tape to be used for recording.**

Preparations for playback

3 **Press, then insert the recorded tape to be played back.**

4 **"on" (■→▬)**

5 **Select the tape speed.**
▬×2...at double speed.
■×1...at normal speed.



Tape deck (RS-D225W)

6 **Press.**
(The recording indicator will be illuminated.)

7 **Press.**
(TAPE DECK 1 playback and TAPE DECK 2 recording will then begin.)

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 4 screws (❶~❹).

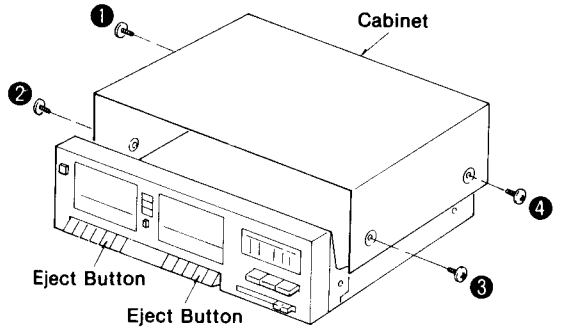


Fig. 1

Ref. No. 2	How to remove the mechanism unit
Procedure 1 → 2	1. Push the eject button (see fig. 1). 2. Remove the 6 screws (❶~❻). 3. Remove the counter belt (for mechanism unit of tape [2]).

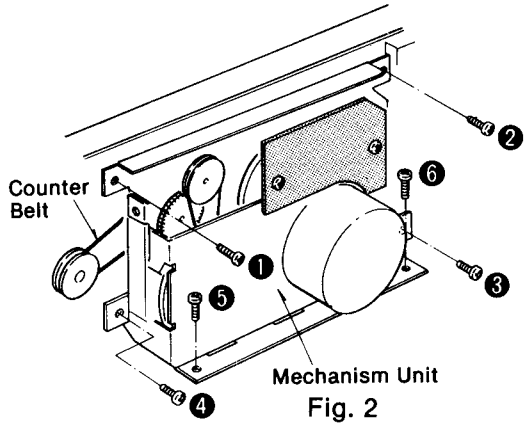


Fig. 2

Ref. No. 4	How to remove the front panel
Procedure 1 → 2 → 3 → 4	• Remove the 5 screws (❶~❺).

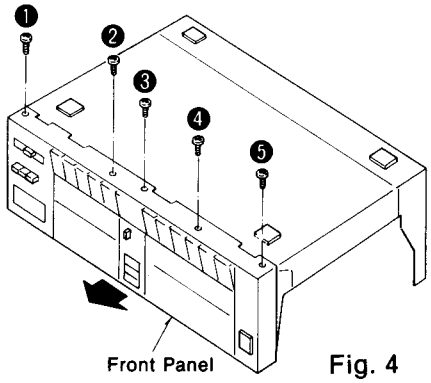


Fig. 4

Ref. No. 3	How to remove the LED meter P.C.B. and VR/SW P.C.B.
Procedure 1 → 3	1. Remove the one screw (❶). 2. Push the 3 tabs aside, and then remove the LED P.C.B. 3. Remove the 2 screws (❷, ❸). 4. Push the 3 tabs aside, and then remove the VR/SW P.C.B.

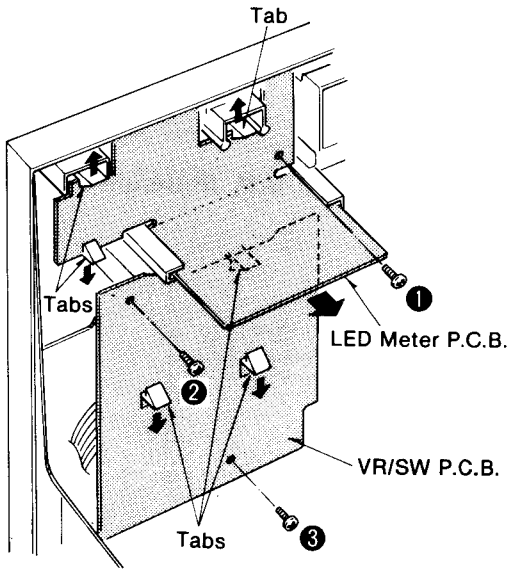


Fig. 3

Ref. No. 5	How to remove the main P.C.B.
Procedure 1 → 5	1. Remove the one screw (❶). 2. Open the side of back chassis, and then pull down the back chassis. 3. Push the 4 tabs aside.

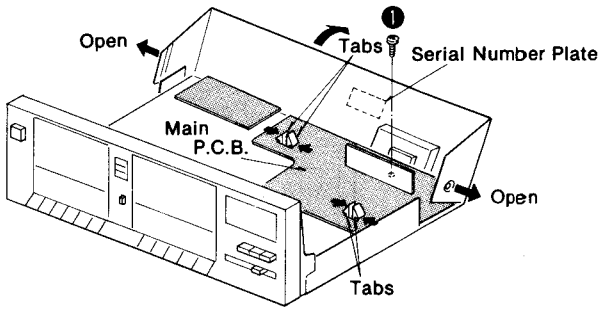


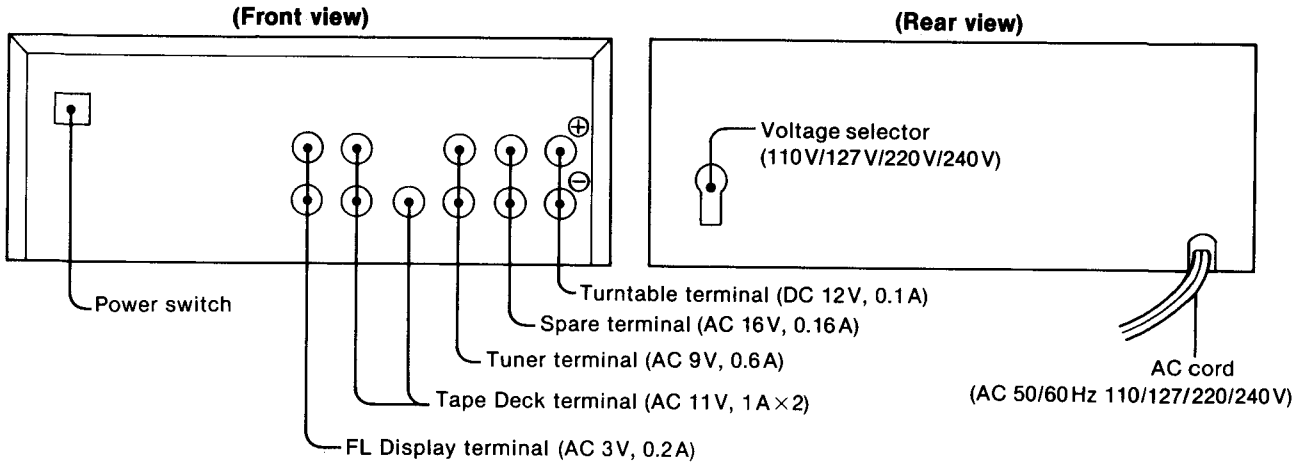
Fig. 5

*** Serial No. Indication**

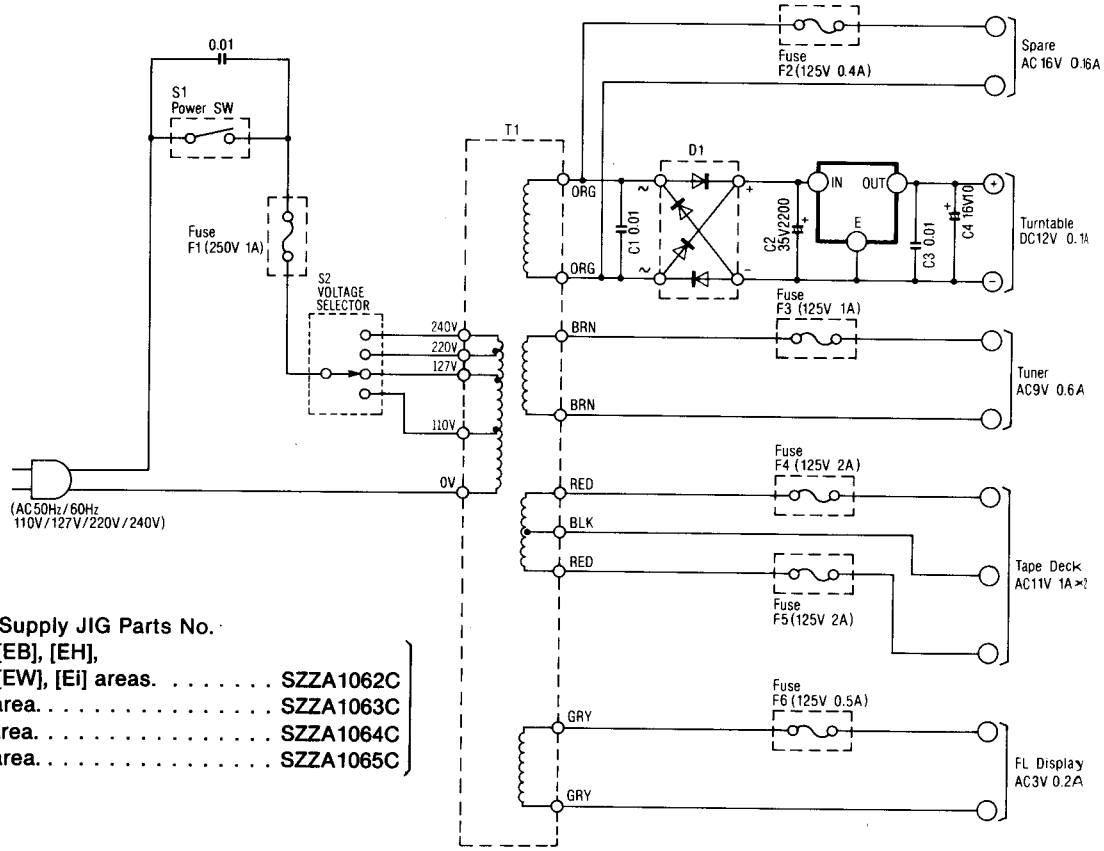
• The serial number plate of the product is attached to the back chassis (shown in fig. 5).

■ INFORMATION ON POWER SUPPLY JIG

• LOCATION



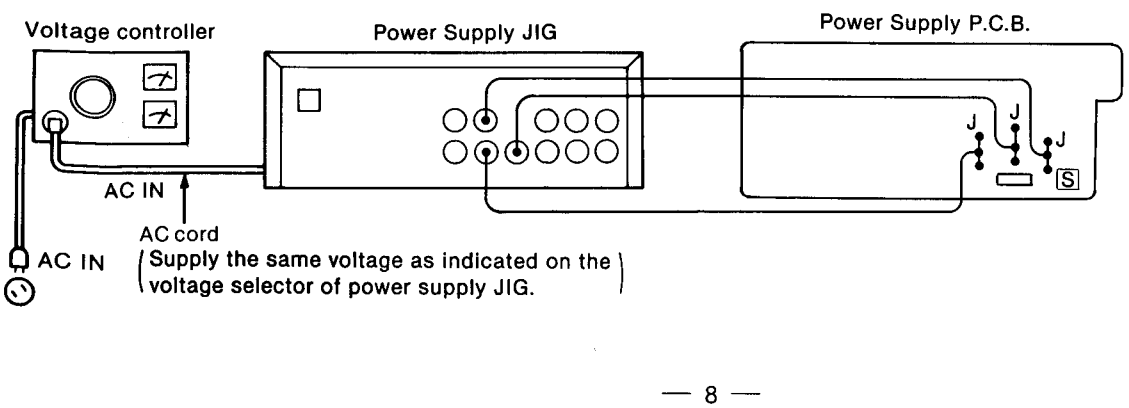
• SCHEMATIC DIAGRAM (Reference)



※ Power Supply JIG Parts No.

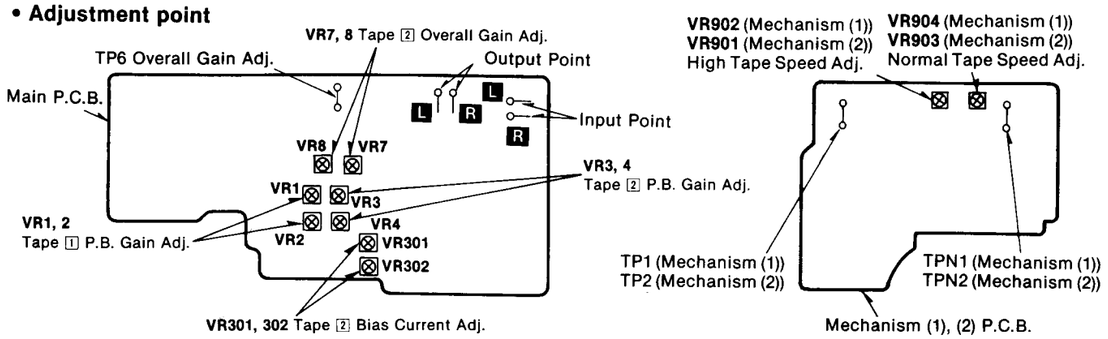
- [EX], [EB], [EH], [EF], [EW], [Ei] areas. SZZA1062C
- [EK] area. SZZA1063C
- [XL] area. SZZA1064C
- [XA] area. SZZA1065C

• HOW TO CONNECT



■ MEASUREMENT AND ADJUSTMENT METHODES

• Adjustment point



Measurement Condition

- Input level controls; Maximum
- Dolby NR switch; Out
- Editing switch; off
- Editing tape speed switch; ×1
- Make sure heads are clean
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature 20±5°C (68±9°F)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator
- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, −20dB); QZZCFM
- Tape speed adjustment (3kHz, −10dB); QZZCWAT
- Playback frequency responce (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, −20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
  - Normal reference blank tape; QZZCRA
  - CrO_2 reference blank tape; QZZCRX
  - Metal reference blank tape; QZZCRZ

Head azimuth adjustment (TAPE 1, 2)

1. Test equipment connection is shown in Fig. 1.
2. Playback the azimuth adjusted part (8kHz, −20dB) of the test tape (QZZCFM) and regulate the angle adjusting screw so that the outputs of L-CH and R-CH are maximized. (When the adjusting positions are different with L-CH and R-CH, find a position where the outputs of L-CH and R-CH are balanced, and then make the adjustment.)
3. At the same time, draw a lissajous waveform and eliminate phase deflection.
4. After adjustment, lock the tape guide height and angle adjustment screws.

Fig. 2

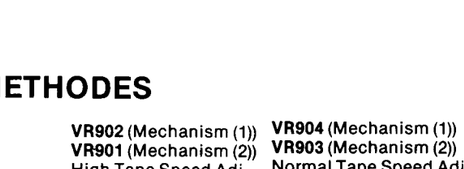


Fig. 1

Tape speed adjustment (TAPE 1, 2)

Normal speed

1. Test equipment connection is shown in Fig. 3.
2. Playback the middle part of the test tape (QZZCWAT).
3. Adjust TAPE 1: VR904 and TAPE 2: VR903 so that the output is within the standard.

High speed

4. Set the editing speed switch to "×2" and short the TAPE 1: TP1 and TPN1 and TAPE 2: TP2 and TPN2.
5. Playback the middle part of the test tape (QZZCWAT).
6. Adjust TAPE 1: VR902 and TAPE 2: VR901 so that the output is within the standard.

Standard value: 3000±20Hz (Normal) 6000±40Hz (High)

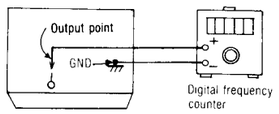


Fig. 3

Playback frequency response (TAPE 1, 2)

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback frequency response part (315Hz, 12.5kHz~63Hz, −20dB) of the test tape (QZZCFM).
3. Check that the frequency is within the range shown in Fig. 5 for both L-CH and R-CH.

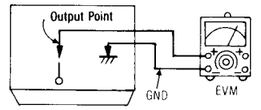


Fig. 4

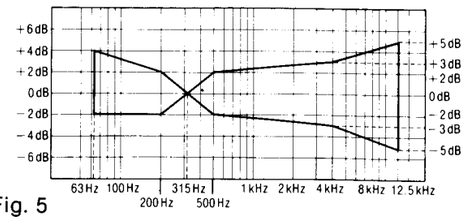


Fig. 5

Playback gain adjustment (TAPE 1, 2)

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback gain adjusted part (315Hz, 0dB) of the test tape (QZZCFM).
3. Adjust TAPE 1: VR1 (L-CH) {VR2 (R-CH)} and TAPE 2: VR3 (L-CH) {VR4 (R-CH)} so that the output is within the standard.

Standard value: 0.4±0.5dB (0.02V)

Overall frequency response (TAPE 2)

1. Test equipment connection is shown in Fig. 6, and connect a jumper of TP6. (See page 9).
2. Set a normal blank tape (QZZCRA) and record by applying signal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz and 10kHz), 20dB attenuated from the reference input level signal (1kHz, −24dB).
3. Playback the signal recorded in step 2, and check that the level of each output frequency is within the range shown in Fig. 7 in comparison with the reference frequency (1kHz).
4. If it is not within the standard range, adjust the bias current by VR301 (L-CH) {VR302 (R-CH)} so that the frequency level is within the standard.
   - Level up in high frequency range..... Increase the bias current.
   - Level down in high frequency range..... Decrease the bias current.
5. After that increase the signal recorded on CrO_2 blank tape (QZZCRX) and metal blank tape (QZZCRZ) up to 12.5kHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.
6. After adjustment, cut a jumper of TP6.

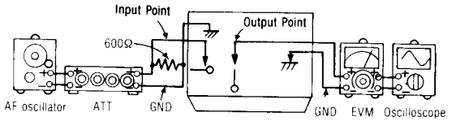


Fig. 6

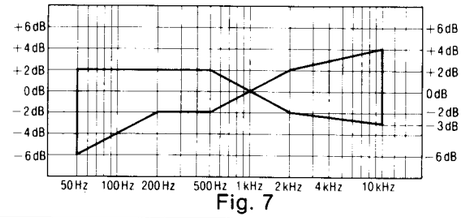


Fig. 7

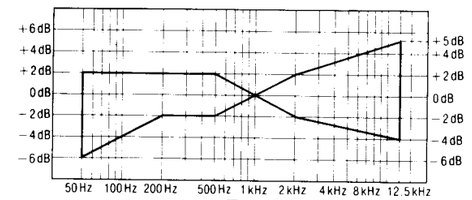


Fig. 8

Overall gain adjustment (TAPE 2)

1. Test equipment connection is shown in Fig. 6, and connect a jumper of TP6. (See page 9.)
2. Set a normal blank tape (QZZCRA) and apply the reference input level signal (1kHz, −24dB) in record pause mode.
3. Adjust the output 0.4V by attenuator and then record.
4. Playback the signal recorded in step 3, and check that the output is within the standard.
5. If it is not within the standard, adjust VR7 (L-CH) {VR8 (R-CH)} and repeat the step (2), (3) and (4) until the output is within the standard.
6. After adjustment, cut a jumper of TP6.

Standard value: 0.4V $^{+0.1}_{-0.08}$V

Dolby NR circuit

1. Test equipment connection is shown in Fig 9.
2. Set a normal tape and apply 5kHz signal in record pause mode.
3. Adjust by attenuator so that the output between terminal ⑥ (L-CH) {terminal ⑲ (R-CH)} of IC401 and ground is 12.3mV.
4. Turn NR switch ON, and check that the level changes as specified from the level in NR out mode.

Standard value: 8±1.5dB

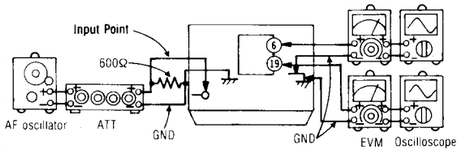


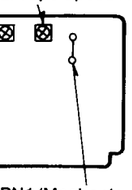
Fig. 9

■ MICRO

(IC801:

Terminal No.	
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	E
12.	E

4 (Mechanism (1))
3 (Mechanism (2))
al Tape Speed Adj.



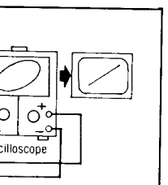
PN1 (Mechanism (1))
PN2 (Mechanism (2))

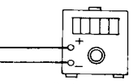
1), (2) P.C.B.

er are clean.
C (68±9°F)

IB); QZZCFM
gain adjustment
RA

Z





3

Playback frequency response (TAPE 1, 2)

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback frequency response part (315Hz, 12.5kHz~63Hz, −20dB) of the test tape (QZZCFM).
3. Check that the frequency is within the range shown in Fig. 5 for both L-CH and R-CH.

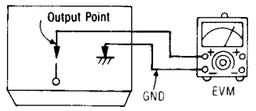


Fig. 4

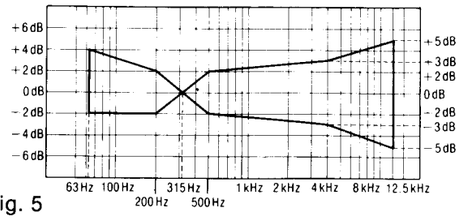


Fig. 5

Playback gain adjustment (TAPE 1, 2)

1. Test equipment connection is shown in Fig. 4.
2. Playback the playback gain adjusted part (315Hz, 0dB) of the test tape (QZZCFM).
3. Adjust TAPE 1: VR1 (L-CH) {VR2 (R-CH)} and TAPE 2: VR3 (L-CH) {VR4 (R-CH)} so that the output is within the standard.

Standard value: 0.4±0.5dB (0.02V)

Overall frequency response (TAPE 2)

1. Test equipment connection is shown in Fig. 6, and connect a jumper of TP6. (See page 9).
2. Set a normal blank tape (QZZCRA) and record by applying signal (50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz and 10kHz), 20dB attenuated from the reference input level signal (1kHz, −24dB).
3. Playback the signal recorded in step 2, and check that the level of each output frequency is within the range shown in Fig. 7 in comparison with the reference frequency (1kHz).

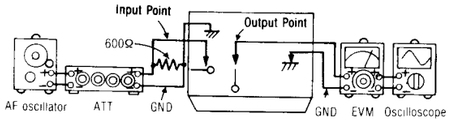


Fig. 6

4. If it is not within the standard range, adjust the bias current by VR301 (L-CH) {VR302 (R-CH)} so that the frequency level is within the standard.
   - Level up in high frequency range.....Increase the bias current.
   - Level down in high frequency range.....Decrease the bias current.
5. After that increase the signal recorded on CrO_2 blank tape (QZZCRX) and metal blank tape (QZZCRZ) up to 12.5kHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.
6. After adjustment, cut a jumper of TP6.

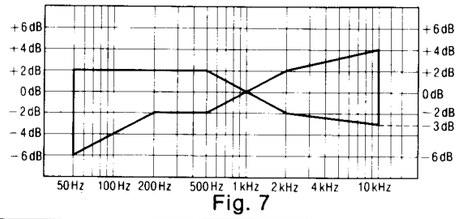


Fig. 7

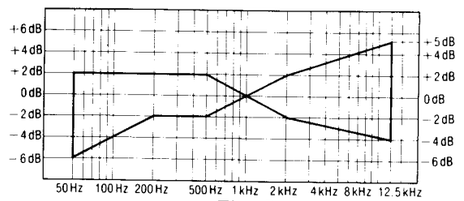


Fig. 8

Overall gain adjustment (TAPE 2)

1. Test equipment connection is shown in Fig. 6, and connect a jumper of TP6. (See page 9.)
2. Set a normal blank tape (QZZCRA) and apply the reference input level signal (1kHz, −24dB) in record pause mode.
3. Adjust the output 0.4V by attenuator and then record.
4. Playback the signal recorded in step 3, and check that the output is within the standard.
5. If it is not within the standard, adjust VR7 (L-CH) {VR8 (R-CH)} and repeat the step (2), (3) and (4) until the output is within the standard.
6. After adjustment, cut a jumper of TP6.

Standard value: 0.4V $^{+\ 0.1}_{-0.08}$ V

Dolby NR circuit

1. Test equipment connection is shown in Fig 9.
2. Set a normal tape and apply 5kHz signal in record pause mode.
3. Adjust by attenuator so that the output between terminal ⑥ (L-CH) {terminal ⑲ (R-CH)} of IC401 and ground is 12.3mV.
4. Turn NR switch ON, and check that the level changes as specified from the level in NR out mode.

Standard value: 8±1.5dB

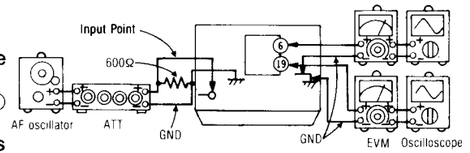
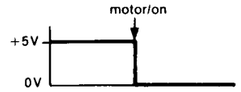
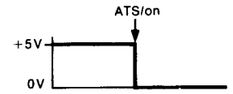


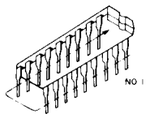
Fig. 9

■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC801: MN1402STN)

Terminal No.	Symbol	Name	Function/operation
1.	Vss	——	• Connection to GND.
2.	CO9	P.B. mute	• "H" in mute on, "L" in mute off.
3.	CO8	Auto tape selector	• "H" in 70μS mode, "L" in 120μS mode.
4.	CO7	Bias	• "H" in bias off, "L" in bias on.
5.	CO6	Direct muting	• "H" in mute off, "L" in mute on.
6.	CO5	——	• Non connection.
7.	AI3	Reading of input switch state tape 1 auto tape selector (S909)	• "L" when auto tape selector is on mode. ATS/on +5V 0V
8.	AI2	Reading of input switch state tape 1 motor (S904)	• "L" when motor switch is on mode. motor/on +5V 0V
9.	AI1	Reading of input switch state tape 1 FF/REW (S906)	• "L" when FF/REW switch is on mode. FF/REW/on +5V 0V
10.	AIφ	Reading of input switch state tape 1 PLAY (S902)	• "L" when PLAY switch is on mode. PLAY/on +5V 0V
11.	BI3	Reading of scan signal output	• Input of Tape 2 REC switch, Tape 2 PLAY switch. • The above-mentioned inputs are read in accordance with DOφ, DO1 scanning. DOφ output → "L".....Reading of REC switch. Rec/on +5V 0V DO1 output → "L".....Reading of PLAY switch. Play/on +5V 0V
12.	BI2	Reading of input switch state editing (S802)	• "H" when editing switch is on mode. . editing/on +5V 0V

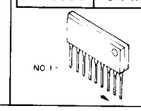
Terminal No.	Symbol	Name	Function/operation
13.	BI1	Reading of input switch state tape [2] motor (S903)	• "L" when motor switch is on mode. 
14.	BIφ	Reading of input switch state tape [2] auto tape selector (S907)	• "L" when auto tape selector is on mode. 
15.	EOφ	Head selector	• "H" in tape [1] Head, "L" in tape [2] Head.
16.	EO1	Tape speed selector	• "H" in high speed, "L" in normal speed.
17.	EO2	Dolby NR IN/OUT	• "H" in REC mode, "L" in PLAY mode.
18.	EO3	Dolby B/C NR selector	• "H" in PLAY mode, "L" in REC mode.
19.	RST	Reset terminal	• Used to reset the microcomputer when power is thrown in. • Reset at "L".
20.	TEST	——	• Connection to GND.
21.	DO3	Motor [2]	• "H" in motor [2] off, "L" in motor [2] on.
22.	DO2	Motor [1]	• "H" in motor [1] off, "L" in motor [1] on.
23.	DO1	SCAN 2	• Scan signal for reading of tape [2] PLAY switch input.
24.	DOφ	SCAN 1	• Scan signal for reading of REC switch input.
25.	SNSφ	Remote control signal input	• Input of serial signal from remote control jack.
26.	SNS1	Reading of input switch state tape speed (S802)	• "H" when tape speed switch is ×2 mode.

• Terminal Guide of Transistors, Diodes and IC's

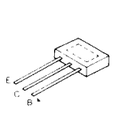


μPC1290C	14 Pin
AN6888	18 Pin
NE657N	24 Pin
MN1402STN	28 Pin
AN7014K	30 Pin

M5218L	8 Pin
MN6634	9 Pin

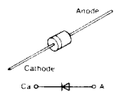


2SB621ARS
2SD592AQRS

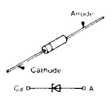


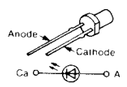
2SA1309AQS
2SB1030QRS
2SC3311AQS
2SD1423QRS
2SD1450R
UN4113
UN4114
UN4116, UN4213

1SS254
1SR35200

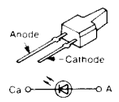


MA4160M
MA4062M



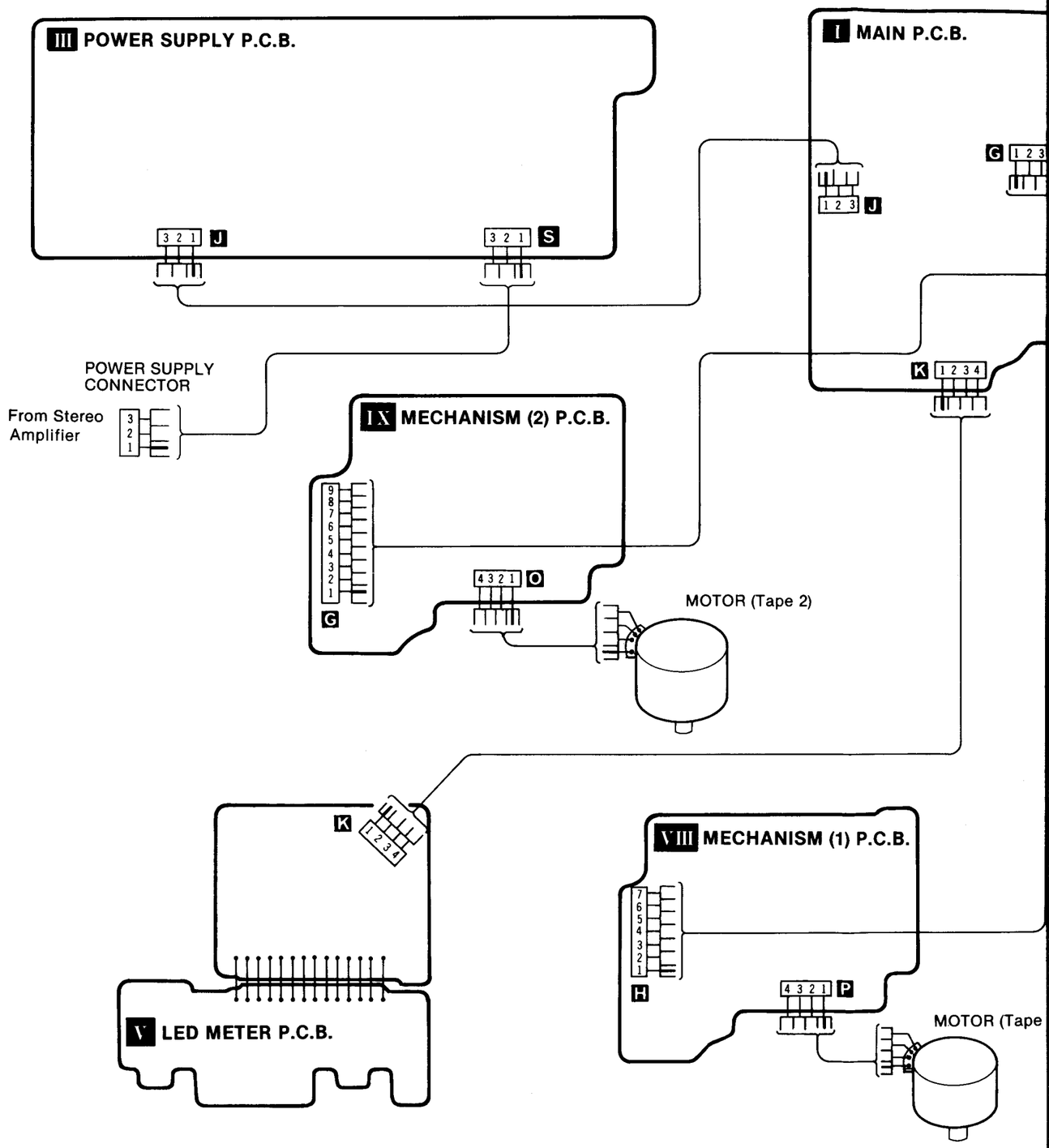


LN463YCPP (YEL)
LN863RCPP (RED)

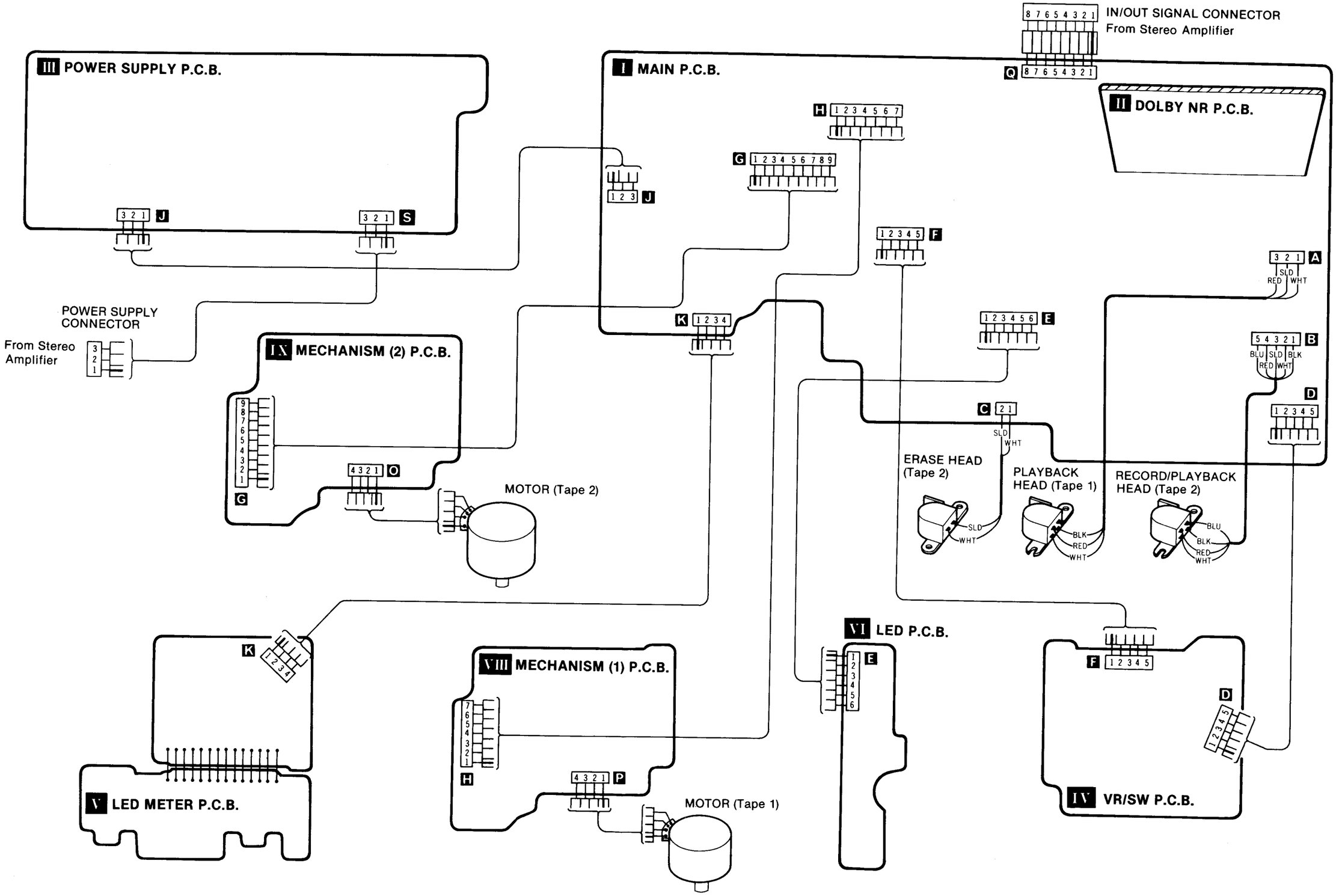


LN846RP (RED)
LN346GP (GRN)
LN446YP (YEL)

■ WIRING CONNECTION DIAGRAM


III POWER SUPPLY P.C.B.
3 2 1 J
3 2 1 S
I MAIN P.C.B.
1 2 3 J
G 1 2 3
K 1 2 3 4
POWER SUPPLY CONNECTOR
From Stereo Amplifier
3
2
1
IX MECHANISM (2) P.C.B.
9 8 7 6 5 4 3 2 1 G
4 3 2 1 O
MOTOR (Tape 2)
K 1 2 3 4
V LED METER P.C.B.
VIII MECHANISM (1) P.C.B.
7 6 5 4 3 2 1 H
4 3 2 1 P
MOTOR (Tape

■ WIRING CONNECTION DIAGRAM

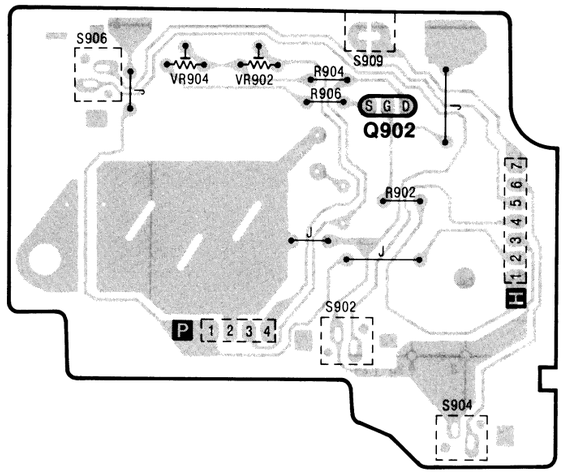


309AQS
030QRS
311AQS
423QRS
450R
13
14
16, UN4213

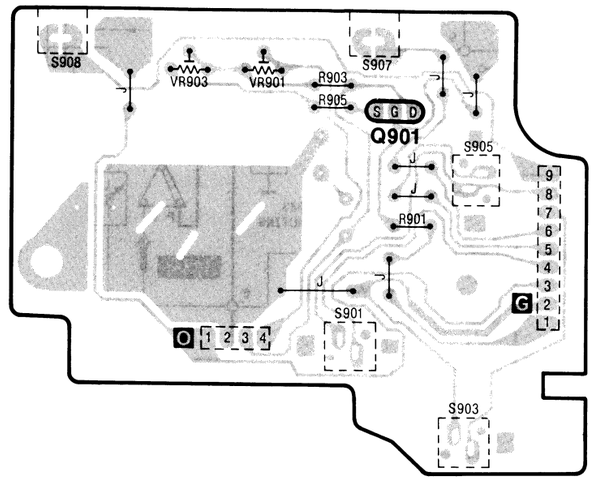
SRP (RED)
SGP (GRN)
SYP (YEL)

■ PRINTED CIRCUIT BOARDS

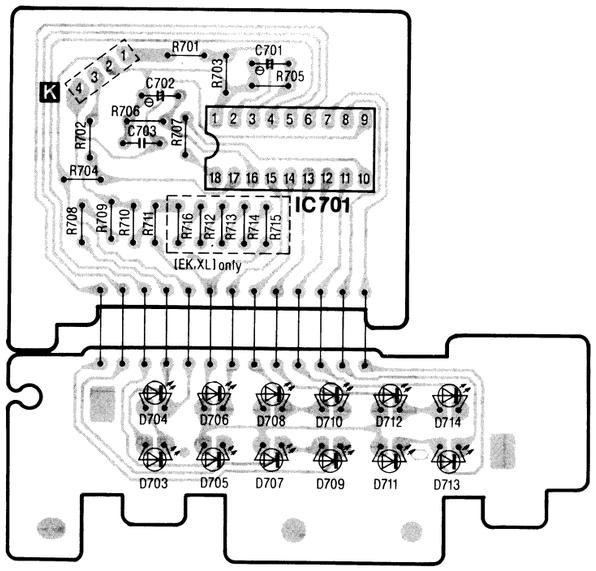
VIII MECHANISM (1) P.C'B.



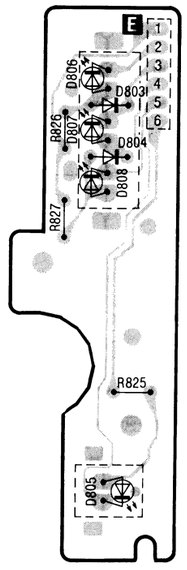
IX MECHANISM (2) P.C.B.



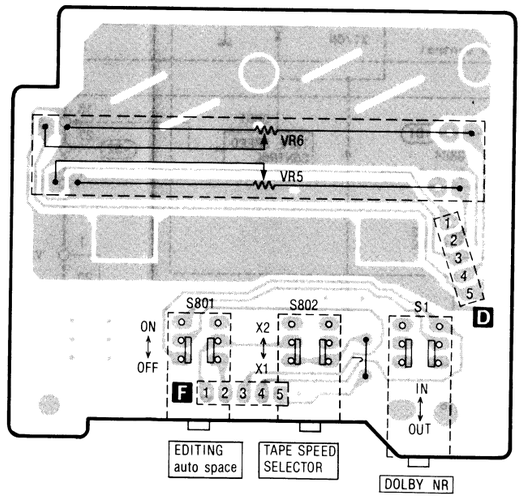
V LED METER P.C.B.



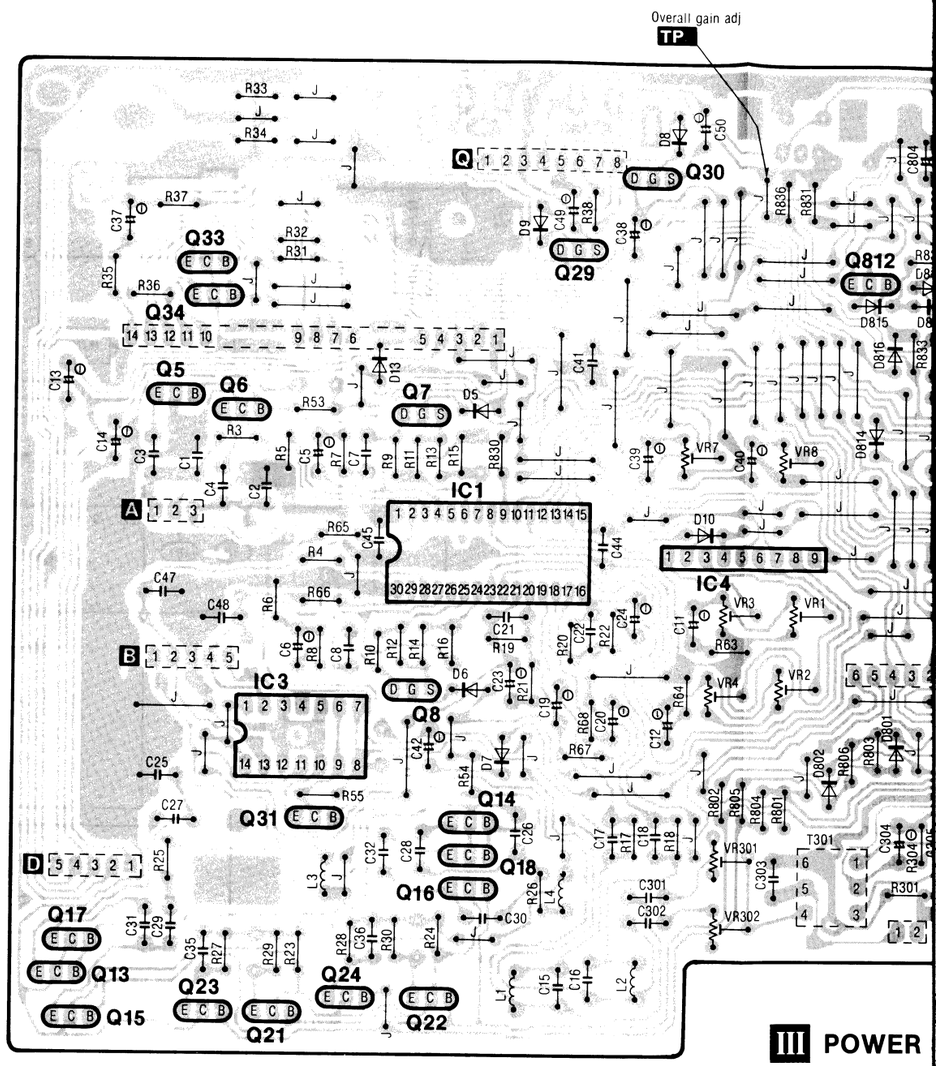
VI LED P.C.B.



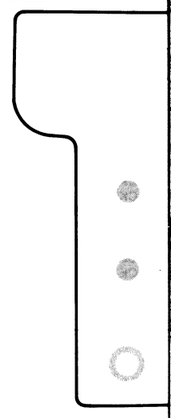
IV VR/SW P.C.B.



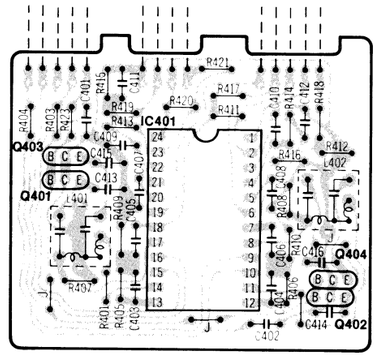
I MAIN P.C.B.



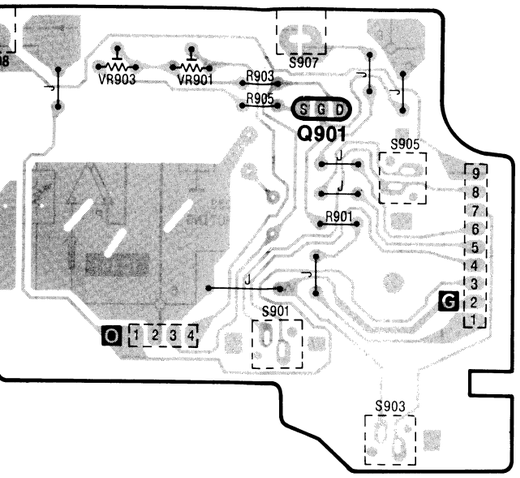
III POWER



II DOLBY NR P.C.B.

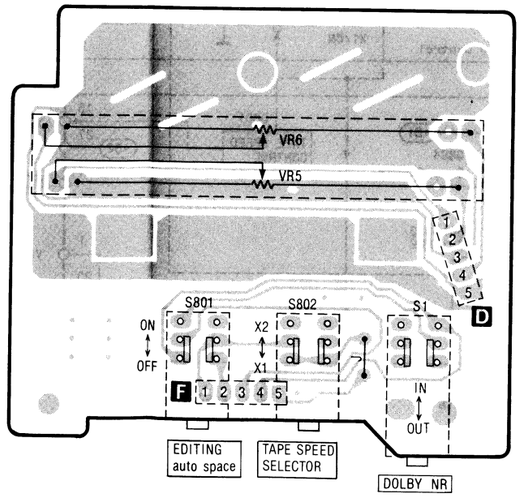


MECHANISM (2) P.C.B.

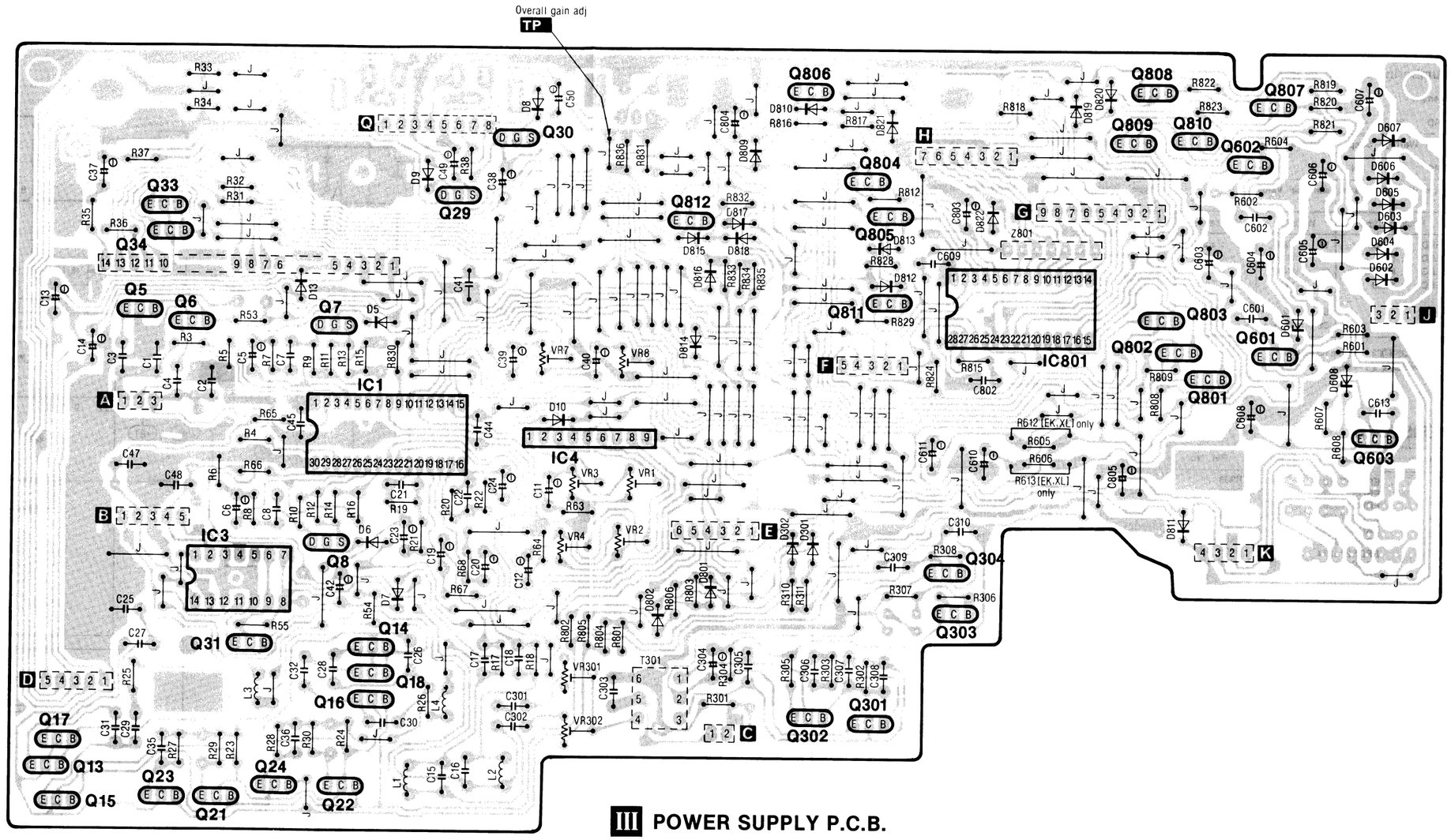


C.B.

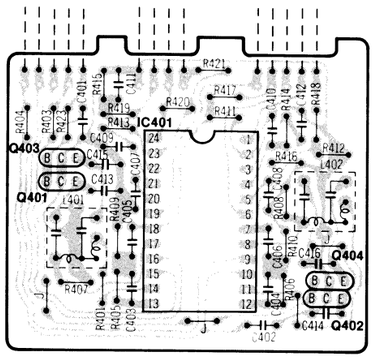
IV VR/SW P.C.B.



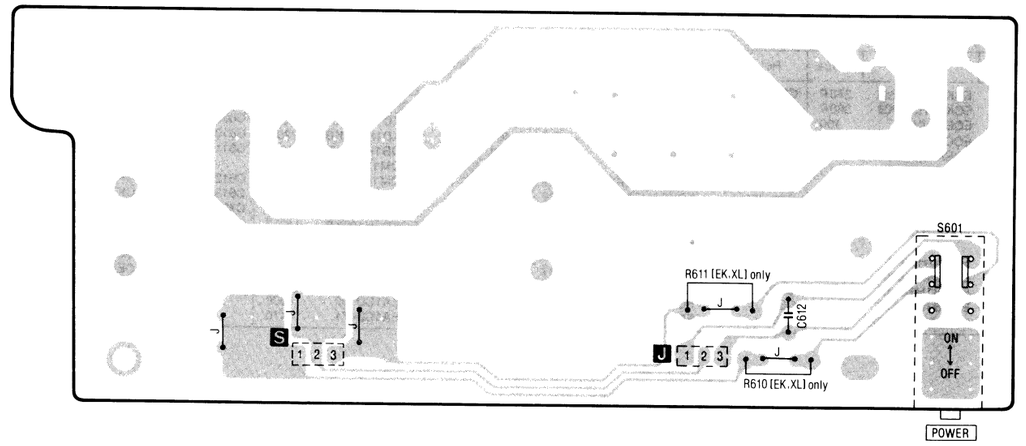
I MAIN P.C.B.



II DOLBY NR P.C.B.



III POWER SUPPLY P.C.B.



■ RESISTORS AND CAPACITORS

Notes:
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- The unit of resistance is Ω (ohm). K=1000Ω, M=1000kΩ
- The unit of capacitance is μF (microfarad). P=10⁻⁶μF.
- Bracketed indications in Ref. columns specify the area. Parts without these indications can be used for all area.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	10	: 1/8W	G	: ±2%
ERO	: Film	12	: 1/2W	J	: ±5%
ERG	: Metal Oxide	25	: 1/4W		
ERC	: Solid	1	: 1W		
		2	: 2W		
		S1	: 1/2W		
		S2	: 1/4W		

ERD10TLJ□□□ → Chip type carbon
ERO10MKG□□□ → Chip type metal film

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Capacitor Type		Voltage				Tolerance	
		ECEA Type		Other			
ECEA	: Electrolytic	0J	: 6.3V	1H	: 50V	CJ	: ±0.25pF
ECCD	: Ceramic	1A	: 10V	2H	: 500V	J	: ±5%
ECKD	: Ceramic	1C	: 16V	1	: 100V	K	: +10%
ECQM	: Polyester	1E	: 25V	KC	: 400V	Z	: +80%, −20%
ECQP	: Polyester	1H	: 50V			Y	: ±22%
ECET	: Electrolytic	1J	: 63V				
ECEA...N	: Non-polar Electrolytic	1V	: 35V				
		25	: 25V				
		56	: 56V				

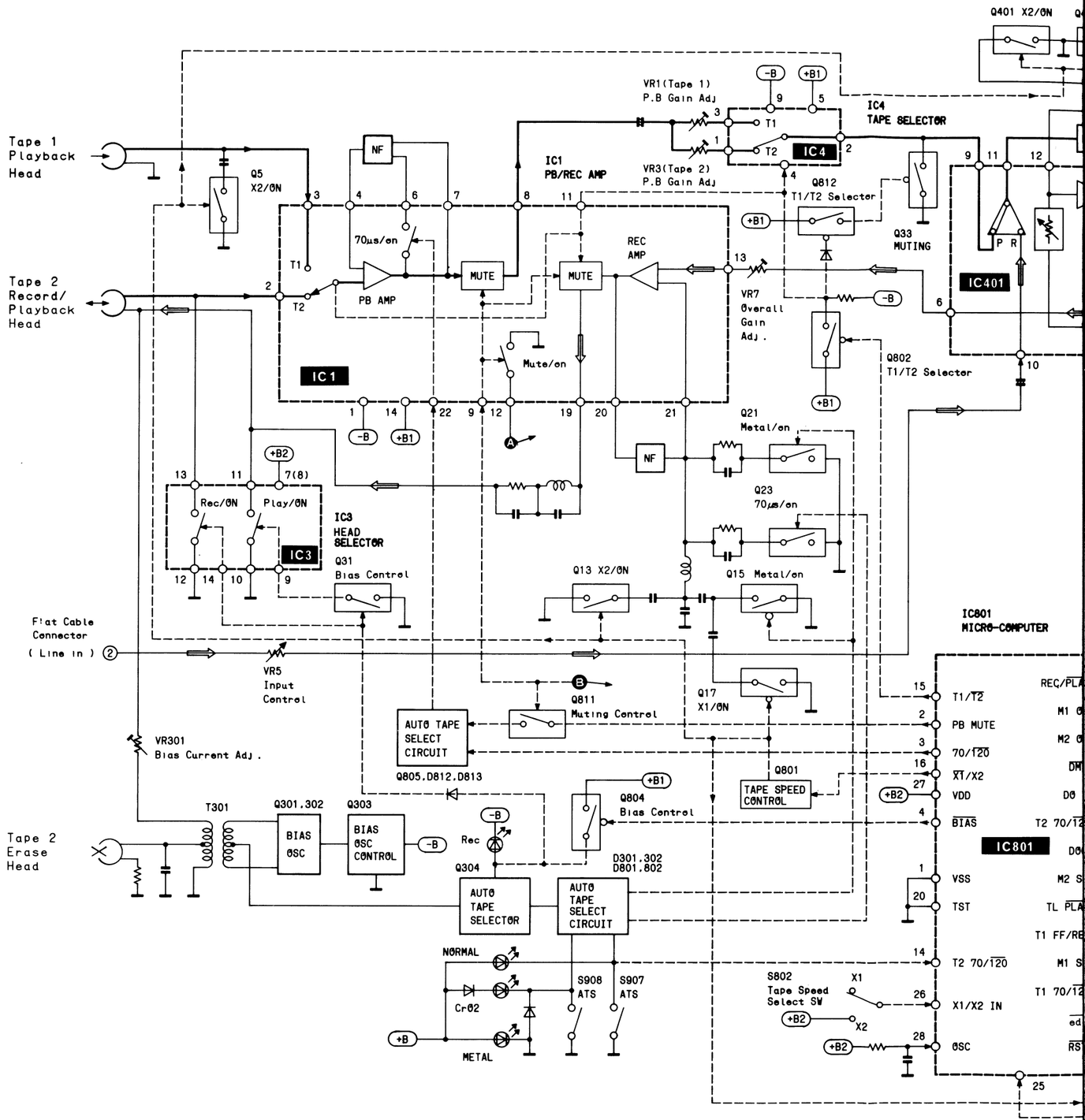
● RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R3, 4	ERDS2TJ101	100	R308	ERDS2TJ561	560	R607	ERDS2TJ102	1K	R804	ERDS2TJ563	56K
R5, 6	ERDS2TJ820	82	R310	ERDS2TJ331	330				R805, 806	ERDS2TJ103	10K
R7, 8	ERDS2TJ392	3.9K				**R608** [EK, XL]	ERDS2TJ101	100	R808	ERDS2TJ332	3.3K
R9, 10	ERDS2TJ272	2.7K	R311	ERDS2TJ220	22	**R608** [other]	ERDS2TJ560	56	R809	ERDS2TJ392	3.9K
R11, 12	ERDS2TJ122	1.2K	R401, 402	ERDS2TJ242	2.4K						
R13, 14	ERDS2TJ332	3.3K	R403, 404	ERDS2TJ471	470	R610, 611	ERQ14LKR22	0.22	R812	ERDS2TJ473	47K
R15, 16	ERDS2TJ274	270K	R405, 406	ERDS2TJ473	47K	[EK, XL] only			R815	ERDS2TJ183	18K
R17, 18	ERDS2TJ103	10K	R407, 408	ERDS2TJ432	4.3K	R612, 613	ERG1ANJ560	56	R816	ERDS2TJ103	10K
R19, 20	ERDS2TJ153	15K	R409, 410	ERDS2TJ332	3.3K	[EK, XL] only			R817	ERDS2TJ123	12K
R21, 22	ERDS2TJ472	4.7K	R411, 412	ERDS2TJ102	1K	R701, 702	ERDS2TJ363	36K	R818, 819	ERDS2TJ102	1K
			R413, 414	ERDS2TJ274	270K	R703, 704	ERDS2TJ472	4.7K	R820	ERDS2TJ473	47K
R23, 24	ERDS2TJ102	1K	R415, 416	ERDS2TJ184	180K	R705, 706	ERDS2TJ154	150K	R821	ERDS2TJ152	1.5K
R25, 26	ERDS2TJ330	33	R417, 418	ERDS2TJ470	47	R707	ERDS2TJ562	5.6K	R822	ERDS2TJ473	47K
R27, 28	ERDS2TJ182	1.8K				R708, 709	ERDS2TJ221	220	R823	ERDS2TJ152	1.5K
R29, 30	ERDS2TJ472	4.7K	R419	ERDS2TJ512	5.1K						
R31, 32	ERDS2TJ103	10K	R420	ERDS2TJ103	10K	**R710** [EK, XL]	ERDS2TJ6R8	6.8	R824	ERDS2TJ223	22K
R33, 34	ERDS2TJ273	27K	R421	ERDS2TJ102	1K	**R710** [other]	ERDS2TJ330	33	R825	ERDS2TJ102	1K
R35, 36	ERDS2TJ152	1.5K	R423	ERDS2TJ102	1K				R826, 827	ERDS2TJ391	390
R37, 38	ERDS2TJ274	270K				**R711** [EK, XL]	ERDS2TJ471	470	R828, 829	ERDS2TJ103	10K
R53, 54	ERDS2TJ103	10K	**R601, 602**	ERD2FCG100	10	**R711** [other]	ERDS2TJ330	33	R830, 831	ERDS2TJ102	1K
R55	ERDS2TJ223	22K	[EK, XL]						R832	ERDS2TJ472	4.7K
			R601, 602	ERDS2TJ100	10	R712, 713	ERDS2TJ150	15	R833	ERDS2TJ103	10K
R63, 64	ERDS2TJ103	10K	[other]			[EK, XL] only			R834, 835	ERDS2TJ472	4.7K
R65, 66	ERDS2TJ101	100				R714, 715	ERDS2TJ150	15	R836	ERDS2TJ103	10K
R67, 68	ERDS2TJ562	5.6K	R603, 604	ERDS2TJ102	1K	[EK, XL] only			R901, 902	ERDS2TJ104	100K
R301	ERDS2TJ1R0	1				R716	ERDS2TJ150	15	R903, 904	ERDS2TJ223	22K
R302, 303	ERDS2TJ683	68K	**R605, 606**	ERDS2TJ271	270	[EK, XL] only					
R304, 305	ERDS2TJ100	10	[EK, XL]			R801	ERDS2TJ103	10K	R905, 906	ERDS2TJ103	10K
R306	ERDS2TJ561	560	**R605, 606**	ERDS2TJ470	47	R802	ERDS2TJ332	3.3K			
R307	ERDS2TJ183	18K	[other]			R803	ERDS2TJ272	2.7K			

● CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1, 2	ECKD1H271KB	270P	C31, 32	ECFTD333KXL	0.033	C308	ECFTD222KXL	0.0022	C607	ECEA1CU102	1000
C3, 4	ECKD1H391KB	390P	C35, 36	ECFTD153KXL	0.015	C309	ECKD1H223ZF	0.022	C608	ECEA0JU222	2200
C5, 6	ECEA0JU101	100	C37, 38	ECEA1EU4R7	4.7	C310	ECKD1H473ZF	0.047	C609	ECKD1H223ZF	0.022
C7, 8	ECQB1H123JZ	0.012	C39, 40	ECEA1HU2R2	2.2	C401, 402	ECKD1H221KB	220P	C610	ECEA1AU221	220
C11, 12	ECEA1EU4R7	4.7	C41	ECKD1H473ZF	0.047	C403, 404	ECQB1H472JZ	0.0047	C611	ECEA1AU471	470
C13, 14	ECEA1HU010	1				C405, 406	ECQM1H333JZ	0.033			
C15, 16	ECKD2H101KB	100P	C42	ECEA1HU2R2	2.2	C407, 408	ECQM1H473JZ	0.047	C612	ECKD2H682PEL	0.0068
C17, 18	RCBS1H561KBY	560P	C44, 45	ECKD1H223ZF	0.022	C409, 410	ECQM1H334JZ	0.33	C613	ECKD1H223ZF	0.022
C19, 20	ECEA1HU010	1	C47, 48	ECKD1H681KB	680P	C411, 412	ECQM1H104JZ	0.1	C701, 702	ECEA1HU2R2	2.2
C21, 22	RCBS1H181KBY	180P	C49, 50	ECEA1EU4R7	4.7	C413, 414	ECKD1H122KB	0.0012	C703	ECKD1H223ZF	0.022
			C301, 302	ECCD1H221K	220P				C802	ECCD1H101K	100P
C23, 24	ECEA1HU010	1	C303	ECQP1183JZ	0.018	C415, 416	ECKD1H152KB	0.0015	C803	ECEA1EU4R7	4.7
C25, 26	ECQB1H102JZ	0.001	C304	ECEA1CU470	47	C601, 602	ECKD1H223ZF	0.022	C804	ECEA1AU221	220
C27, 28	ECQB1H223JZ	0.022	C305	ECKD1H392KB	0.0039	C603, 604	ECEA1AU221	220	C805	ECEA1HUR47	0.47
C29	ECQB1H123JZ	0.012	C306	ECFTD222KXL	0.0022	C605	ECEA1CU102	1000			
C30	ECQM1H123JZ	0.012	C307	ECFTD682KXL	0.0068	C606	ECEA1CU471	470			

■ BLOCK DIAGRAM

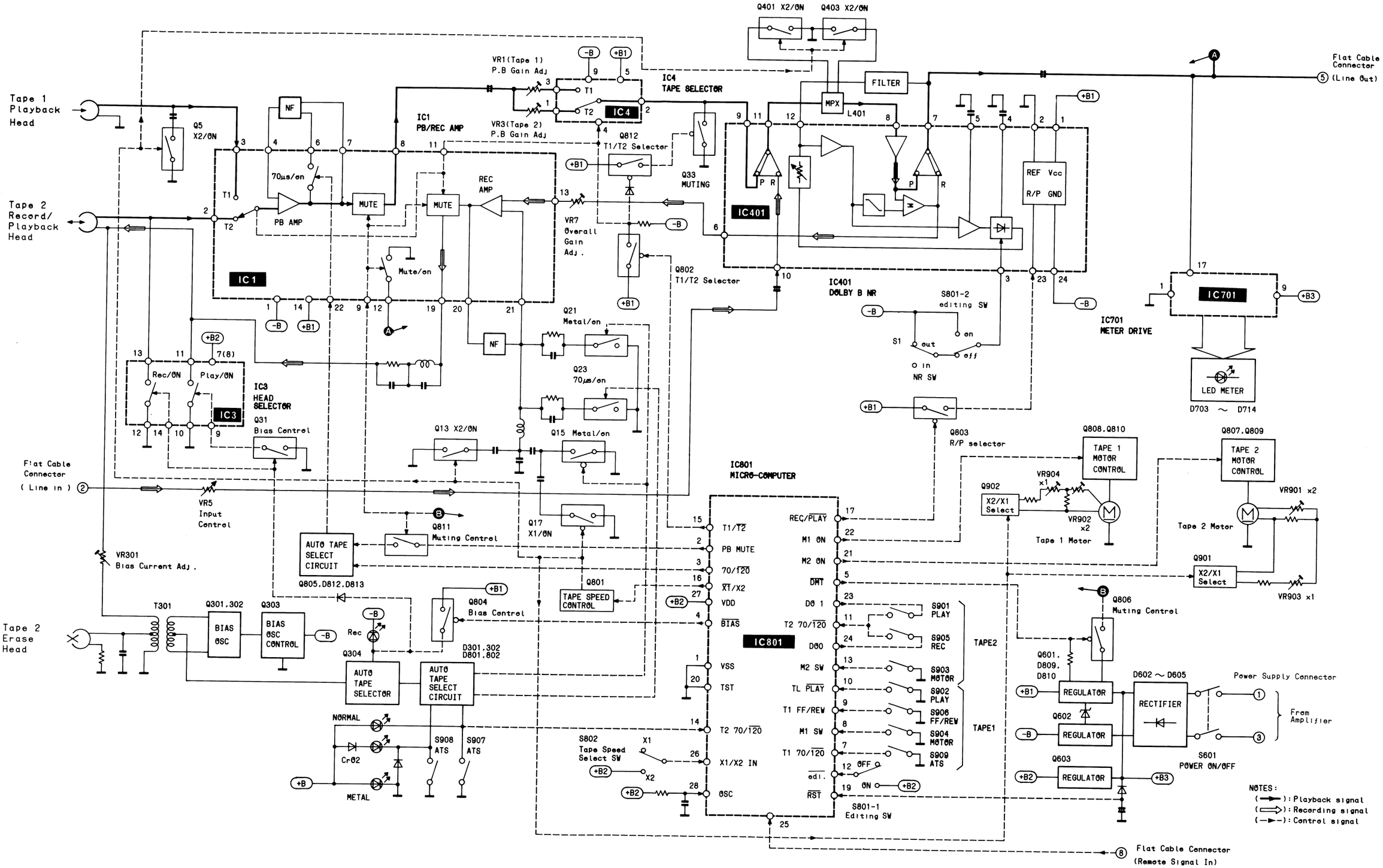


pecify the area.
for all area.

Part No.	Value
RDS2TJ563	56K
RDS2TJ103	10K
RDS2TJ332	3.3K
RDS2TJ392	3.9K
RDS2TJ473	47K
RDS2TJ183	18K
RDS2TJ103	10K
RDS2TJ123	12K
RDS2TJ102	1K
RDS2TJ473	47K
RDS2TJ152	1.5K
RDS2TJ473	47K
RDS2TJ152	1.5K
RDS2TJ223	22K
RDS2TJ102	1K
RDS2TJ391	390
RDS2TJ103	10K
RDS2TJ102	1K
RDS2TJ472	4.7K
RDS2TJ103	10K
RDS2TJ472	4.7K
RDS2TJ103	10K
RDS2TJ104	100K
RDS2TJ223	22K
RDS2TJ103	10K

Part No.	Value
EA1CU102	1000
EA0JU222	2200
KD1H223ZF	0.022
EA1AU221	220
EA1AU471	470
KD2H682PEL	0.0068
KD1H223ZF	0.022
EA1HU2R2	2.2
KD1H223ZF	0.022
CD1H101K	100P
EA1EU4R7	4.7
EA1AU221	220
EA1HUR47	0.47

■ BLOCK DIAGRAM



■ ELECTRICAL PARTS LIST

Notes:
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  When replacing any of these components, use only manufacturer's specified parts.

Ref. No.		Part No.	Description
INTEGRATED CIRCUITS			
IC1		AN7014K	IC
IC3		UPC1290C	IC
IC4		MN6634	IC
IC401		NE657	IC
IC701		AN6888	IC
IC801		MN1402STN	IC
TRANSISTORS			
Q5, 6, 33, 34		2SD1330R	Transistor
Q7, 8, 29, 30		2SJ40D	Transistor
Q13, 14, 21~24, 301, 302, 811		2SC3311-Q	Transistor
Q15~18, 806		2SA1309Q	Transistor
Q31		UN4213	Transistor
Q303 [EK, XL]		2SB621A-R	Transistor
Q303 [other]		2SB1030Q	Transistor
Q304, 601, 807, 808		2SD592ANC-Q	Transistor
Q401~404		2SC3311-Q	Transistor
Q602		2SB621A-R	Transistor
Q603		2SD14230	Transistor
Q801, 802, 805, 812		UN4113	Transistor
Q803, 809, 810		UN4114	Transistor
Q804		UN4116	Transistor
Q901, 902		2SK381D	Transistor
DIODES			
D5, 6, 8, 9, 13, 609, 819~822		1SS254	Diode
D7, 10, 301, 302, 801~804, 809~818		MA165	Diode
D601		MA4160M	Diode
D602~607	⚠	1SR35200	Diode
D608		MA4062-M	Diode
D703~708		LN463YCPPU	L.E.D.
D709~714		LN863RCPP	L.E.D.
D805, 806		LN846RP	L.E.D.
D807		LN346GP	L.E.D.
D808		LN446YP	L.E.D.
COILS			
L1, 2		SLQX303-1K	Choke
L3, 4		QLQX2722D	Choke
L301		SL09C19-K	Bias OSC
L401, 402		QLM9Z10K	MPX Coil
VARIABLE RESISTORS			
VR1~4		EVND4AA00B24	Tape 1/Tape 2 P.B. Gain Adj.
VR5, 6		EWAPB1X05A54	Input Volume
VR7, 8		EVND4AA00B14	Overall Gain Adj.
VR301, 302		EVND4AA00B15	Bias Current Adj.
VR901~904		EVND1AA00B14	Tape Speed Adj.
COMBINATION PART			
Z801		EXBF7E562J	5.6KΩ×6
SWITCHES			
S1, 801, 802		SSH3702	NR Editing Switch
S601	⚠	SSH1069	Power Switch
S901~906		SSP83	Leaf Switch
S907~909		LSA-1150AU	Leaf Switch

■ SCHEMATIC DIAGRAM

Notes:
- **S1** : Dolby NR switch in "**out**" position.
- **S601** : Power switch in "**off**" position.
- **S801** : Editing switch in "**off**" position.
- **S802** : Editing tape speed select switch in "**Normal**" position.
- **S901** : Tape [2] play switch in "**off**" position.
- **S902** : Tape [1] play switch in "**off**" position.
- **S903** : Tape [2] motor switch in "**off**" position.
- **S904** : Tape [1] motor switch in "**off**" position.
- **S905** : Tape [2] rec switch in "**off**" position.
- **S906** : Tape [1] FF/REW switch in "**off**" position.
- **S907** : Tape [2] Normal switch in "**off**" position.
- **S908** : Tape [2] CrO_2 switch in "**off**" position.
- **S909** : Tape [1] 70μS switch in "**off**" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
  1K=1,000(Ω), 1M=1,000k(Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and Tape [2] playback mode with volume control at minimum position otherwise specified.
  ( ).....Voltage values at record mode.
  CrO_2.....Voltage values at CrO_2 tape mode.
  Metal.....Voltage values at Metal tape mode.
  NR.....Voltage values at Dolby NR mode.
  edi.....Voltage values at editing mode.
  For measurement use EVM.
- (———) indicates B (bias).
- (⋯⋯) indicates the flow of the playback signal.
- (⟹) indicates the flow of the record signal.

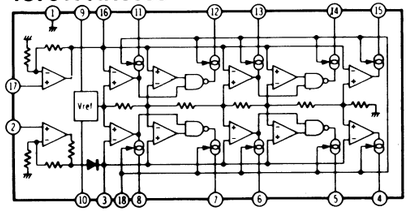
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

∗ Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.

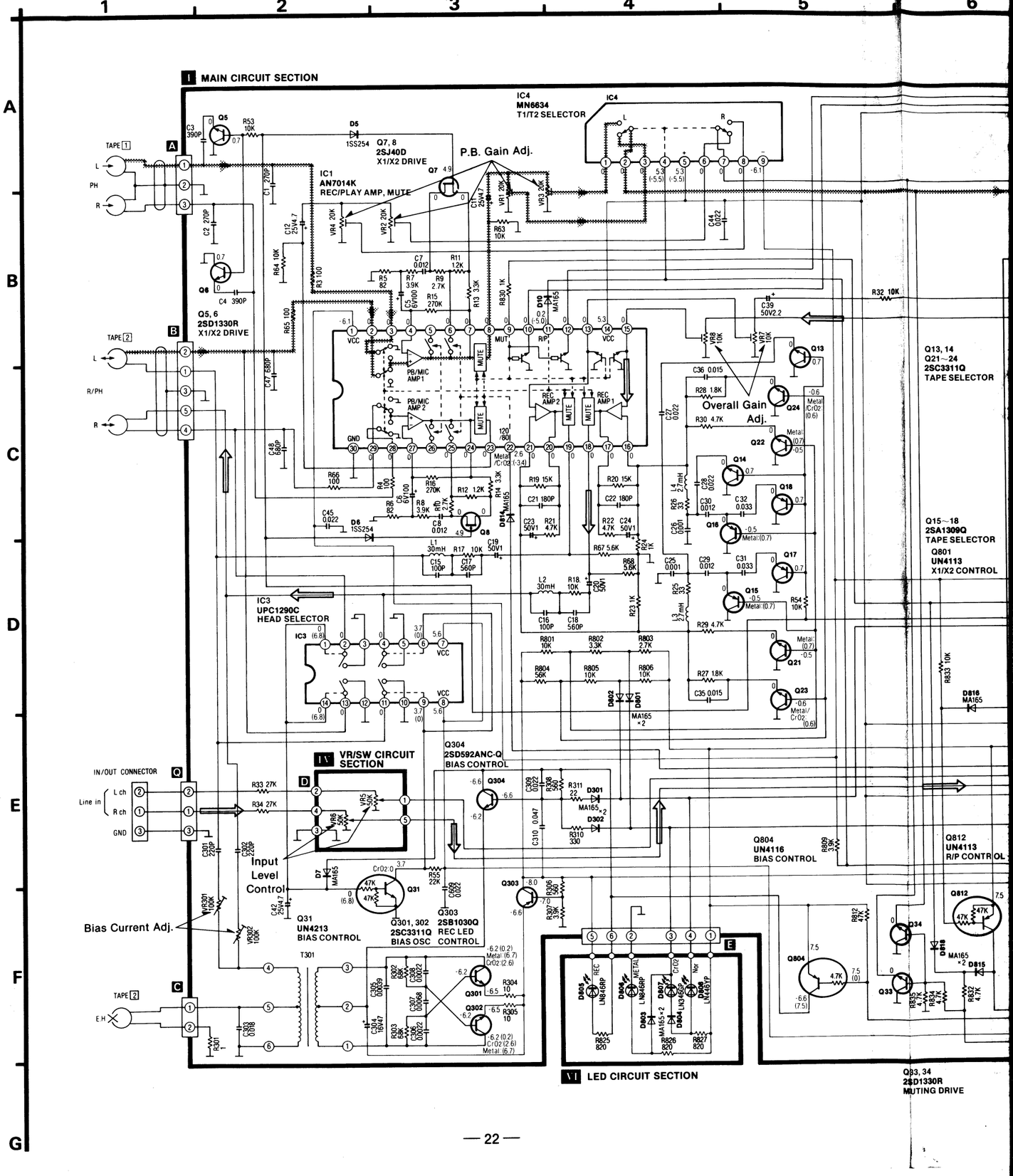
■ EQUIVALENT CIRCUIT

IC701: AN6888



SPECIFICATIONS ∗ Input level control... MAX

Playback S/N ratio ∗ Test tape... QZZCFM	Greater than 45dB
Overall distortion ∗ Test tape ...QZZCRA for Normal ...QZZCRX for CrO_2 ...QZZCRZ for Metal	Normal..... Less than 3.5% CrO_2, Metal... Less than 4%
Overall S/N ratio ∗ Test tape... QZZCRA	Greater than 43dB (without NAB filter)



II DOLBY NR CIRCUIT SECTION

Q401~404
2SC3311Q

IC401
NE857
DOLBY NR

Q13, 14
Q21~24
2SC3311Q
TAPE SELECTOR

Q15~18
2SA1309Q
TAPE SELECTOR

Q801
UN4113
X1/X2 CONTROL

Q803
UN4114
R/P CONTROL

Q804
UN4116
BIAS CONTROL

Q812
UN4113
R/P CONTROL

Q802
UN4113
T1/T2
SELECT
CONTROL

Q805
UN4113
70μs/120μs
CONTROL

Q811
2SC3311Q
MUTING
CONTROL

Q83, 34
2SD1330R
MUTING DRIVE

IC801
MN1402STN
MICRO
COMPUTER

Z801 5.6K×6

IV VR/SW CIRCUIT SECTION

S1 (DOLBY NR) IN OUT
S801-2 (EDITING) ON OFF

Q901, 902
2SK381D X1/X2 SELECTOR

VIII MECHANISM (1) CIRCUIT SECTION

S901 PLAY
S903 MOTOR
S905 REC
S907 ATS
S909 ATS
TAPE 2

S902 PLAY
S906 FF/REW
S904 MOTOR
S908 ATS
TAPE 1

IX MECHANISM (2) CIRCUIT SECTION
Tape Speed Adj.

S801-1 (EDITING) OFF ON
S802 (TAPE SPEED) X1 X2

Q601
2SD592ANC-Q
REGULATOR

Q602
2SB621A-R
REGULATOR

Q806
2SA1309Q
MUTING CONTROL

Q809, 810
UN4114
MOTOR CONTROL

Q807, 808
2SD592ANC-Q
MOTOR DRIVE

D602~607
1SR35200
×6

D703~708
LN463YCPPU
×6

D709~714
LN863RCPP
×6

V LED METER CIRCUIT SECTION

IC701
AN6888
LED METER DRIVE

Q Q29, 30
2SJ40D
SWITCHING

IN/OUT CONNECTOR
L ch
R ch
Line out
GND
Record Control Signal (Out)
Tape Deck Control (In)

III POWER SUPPLY CIRCUIT SECTION
AC11.3V
AC11.3V
From Amplifier

R610 0.22 [EK.XL] only
R611 0.22 [EK.XL] only

■ MECHANICAL PARTS LOCATION

NOTES:

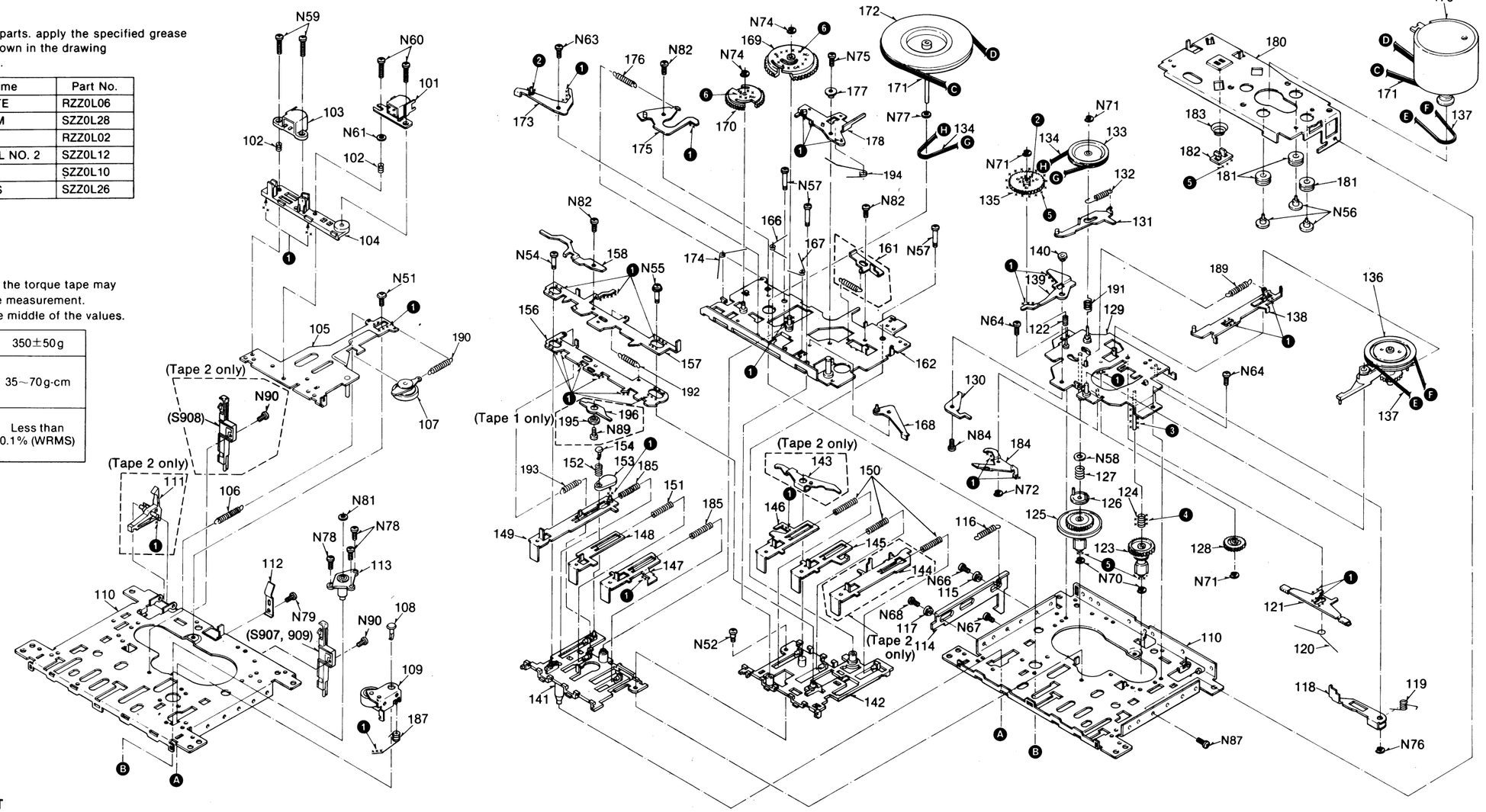
- When changing mechanism parts. apply the specified grease to the are marked "××" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
❶	ROCOL PASTE	RZZ0L06
❷	FLOIL G-488M	SZZ0L28
❸	FLOIL 947P	RZZ0L02
❹	SILICONE OIL NO. 2	SZZ0L12
❺	FLOIL G-488	SZZ0L10
❻	FLOIL G-311S	SZZ0L26

SPECIFICATIONS

NOTE: The value indicated by the torque tape may fluctuate during torque measurement. In that case, obtain the middle of the values.

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter..... QZZSRKCT	35~70g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.1% (WRMS)



REPLACEMENT PARTS LIST

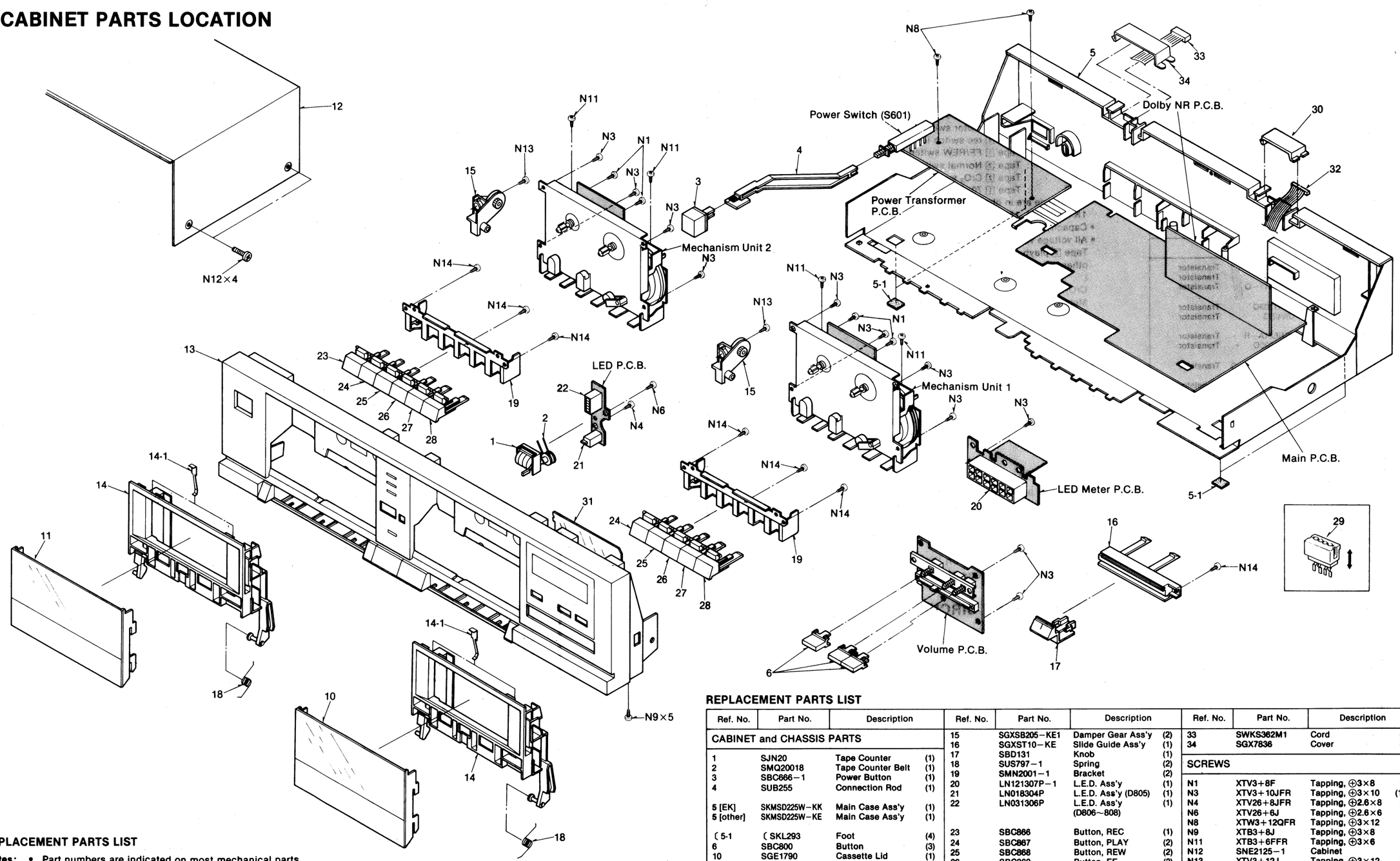
Ref. No.	Part No.	Part Name & Description	
MECHANISM PARTS			
101	SJH95	R.P Head	(2)
102	SMQ4596	Head Spring	(4)
103	SJH97	Dummy Head (Tape 1)	(1)
103	SJH96	E Head (Tape 2)	(1)
104	SMQ4768	Head Base	(2)
105	RFD135Z	Head Panel Ass'y	(2)
106	SMQ4770	Head Panel Spring	(2)
107	SMQ4772	Take Up Roller Shaft Ass'y	(2)
108	SMQ4774	Function Lever Stopper	(2)
109	SMQ4776−1	Pinch Roller Arm Ass'y	(2)
110	SMQT1458	Chassis	(2)
111	SMQ4778	REC Safety Lever (Tape 2 only)	(1)
112	SMQ4780	Pack Hold Spring	(2)
113	SMQ4782	Flywheel Metal	(2)
114	RFY183Z	Eject Slider Lever	(2)
115	SMQ4786	Collar	(2)
116	SMQT1629	E.H, Base Spring	(2)
117	SMQ4788	Collar	(2)
118	SMQ4790	Control Lever	(2)
119	RFS379Z	Control Lever Spring	(2)
120	SMQ4792	Spring	(2)
121	SMQ4794	Brake Arm Ass'y	(2)
122	SMQT1630	Cam Gear Spring	(2)
123	SMQ4800	Supply Reel Ass'y	(2)
124	SMQT1636	Back Tension Spring	(2)
125	SMQ4804	Take Up Reel Ass'y	(2)
126	SMQ4806	Sensing Piece	(2)
127	SMQ4808	Sensing Piece Spring	(2)
128	SMQ4810	FF. Gear	(2)
129	RFU16Z	Reel Base Ass'y	(2)
130	SMQ4814	T. Roller Kick Lever	(2)
131	SMQ4818	Sensing Lever	(2)
132	SMQ4820	Sensing Lever Spring	(2)
133	SMQ4822	Pully	(2)
134	SMQ4824	Full Auto Belt	(2)
135	SMQ4826	Cam Gear	(2)
136	SMQT1583	RF Clutch Arm Ass'y	(2)
137	SMQT1635	RF Belt	(2)
138	SMQ4832	RF Slide Lever (Tape 1)	(2)
139	SMQ4834	Auto Lever	(2)
140	SMQ4938	Auto Lever Collar	(2)
141	SMQ4836	Button Base (L)	(2)
142	SMQ4840	Button Base (R)	(2)
143	SMQT1585	REC Stopper (Tape 2 only)	(1)
144	SMQT1586	REC Button Lever (Tape 2 only)	(1)
145	SMQ4846	Play Button Lever	(2)
146	SMQ4848	RWD Button Lever	(2)
147	SMQ4850	FF Button Lever	(2)
148	SMQ4852	Stop Button Lever	(2)
149	SMQ4854	Pause Button Lever	(2)
150	SMQ4856	Button Lever Spring	(6)
151	SMQ4858	Button Lever Spring	(2)
152	SMQ4860	Pause Lever Spring	(2)
153	SMQ2444	Pause Lever	(2)
154	SMQ4862	Stopper	(2)
156	SMQT1597	Button Function Lever (Tape 1)	(1)
156	SMQT1587	Button Function Lever (Tape 2)	(1)
157	SMQT1589	Switch Function Lever	(2)
158	SMQ4872	E Kick Lever	(2)
161	SMQ4880	REC Function Lever Ass'y	(2)
162	SMQT1590	Sub Chassis Ass'y	(2)
166	SMQ4888	Main Gear Spring	(2)
167	SMQ4890	M. Trigger Arm Spring	(2)
168	SMQ4892	M. Trigger Arm Ass'y	(2)
169	SMQ4894	Main Gear	(2)
170	SMQ4896	P Gear	(2)
171	SMQT1591	Main Belt	(2)
172	SMQT1592	Flywheel Ass'y	(2)
173	SMQ4902	P. Trigger Arm Ass'y	(2)
174	SMQ4904	P. Trigger Arm Spring	(2)
175	SMQ4906	Pause Arm Ass'y	(2)
176	SMQ4909	Pause Arm Spring	(2)
177	SMQ4910	Lift Arm Collar	(2)
178	SMQT1593	Lift Arm Ass'y	(2)
179	SMQT1596	Motor Ass'y	(2)
180	SMQT1633	FM Hold Plate	(2)
181	SMQ4916	Motor Rubber	(6)
182	SMQT1595	Flywheel Patch Plate	(2)
183	SMQ4922	Damper Spring	(2)
184	SMQ4940	Kick Lever	(2)
185	SMQ4858	Button Lever Spring	(4)
187	SMQT1453	Pinch Roller Spring	(2)
189	RFS378Z	RF Slide Lever Spring	(2)
190	RFS249Z	Spring	(2)
191	SMQT1631	RF Clutch Arm Spring	(2)
192	RFS253Z	Spring	(2)
193	SMQT1588	Spring	(2)
194	RFS248Z	Spring	(2)
195	RFX85Z	Collar (Tape 1 only)	(1)
196	RFY353Z	RF Stopper (Tape 1 only)	(1)
SCREWS and NUTS			
N51	SMQT1581	Collar Screw	(2)
N52	SMQ4838	Collar Screw	(2)
N54	SMQ4870	Collar Screw	(2)
N55	SMQ4878	Collar Screw	(2)
N56	SMQ4918	Collar Screw	(6)
N57	SMQ4942	Collar Screw	(6)
N58	SMQT1454	Polyslider Washer	(2)
N59	XSN2+8	Screw ⊕2×8	(4)
N60	SMQT1634	Screw ⊕2×7	(4)
N61	XWG2	Washer 2φ	(2)
N63	SMQT1582	Collar Screw	(2)
N64	XYN2+C4	Screw ⊕2×4	(4)
N66	XYN2+C5	Screw ⊕2×5	(2)
N67	XYN2+C5	Screw ⊕2×5	(2)
N68	XSN2+6	Screw ⊕2×6	(2)
N70	RFE133Z	E-Ring 1.5φ Special	(4)
N71	SMQ4930	Polyslider Washer	(6)
N72	XUC12FT	E-Ring 1.2φ	(2)
N74	XUC2FT	E-Ring 2.0φ	(4)
N75	XYN26+C6	Screw ⊕2.6×6	(2)
N76	XUC15FT	E-Ring 1.5φ	(2)
N77	SMQ4932	Polyslider Washer	(2)
N78	SMQ4934	Screw ⊕2×3	(6)
N79	XTN26+3	Screw ⊕2.6×3	(2)
N81	SMQ4936	Nylon Washer 2×5×0.5	(2)
N82	SMQT1582	Collar Screw	(6)
N84	SMQ4944	Collar Screw	(1)
N87	XYN2+C5	Screw ⊕2×5	(4)
N89	XSS2+25	Screw (Tape 1 only)	(1)
N90	XYN2+C6	Screw	(6)

■ CABIN

REPLACEMENT

Notes: • Part n Please
• Brack area. for all
• The pa descri

■ CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Notes:
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
- The parenthesized numbers in the column of description stand for the quantity per set.

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	
CABINET and CHASSIS PARTS			
1	SJN20	Tape Counter	(1)
2	SMQ20018	Tape Counter Belt	(1)
3	SBC666−1	Power Button	(1)
4	SUB255	Connection Rod	(1)
5 [EK]	SKMSD225W−KK	Main Case Ass'y	(1)
5 [other]	SKMSD225W−KE	Main Case Ass'y	(1)
〔5-1	〔SKL293	Foot	(4)
6	SBC800	Button	(3)
10	SGE1790	Cassette Lid (Tape 1)	(1)
11	SGE1791	Cassette Lid (Tape 2)	(1)
12	SKC1940K99	Cabinet	(1)
13 [EK]	SGYSD225W−KK	Front Panel Ass'y	(1)
13 [other]	SGYSD225W−KE	Front Panel Ass'y	(1)
14	SGXSD225W−KM	Cassette Holder Ass'y	(2)
〔14-1	〔QBP2006A	Tape Pressure Spring	(4)
15	SGXSB205−KE1	Damper Gear Ass'y	(2)
16	SGXST10−KE	Slide Guide Ass'y	(1)
17	SBD131	Knob	(1)
18	SUS797−1	Spring	(2)
19	SMN2001−1	Bracket	(2)
20	LN121307P−1	L.E.D. Ass'y	(1)
21	LN018304P	L.E.D. Ass'y (D805)	(1)
22	LN031306P	L.E.D. Ass'y (D806∼808)	(1)
23	SBC866	Button, REC	(1)
24	SBC867	Button, PLAY	(2)
25	SBC868	Button, REW	(2)
26	SBC869	Button, FF	(2)
27	SBC870	Button, STOP	(2)
28	SBC871	Button, PAUSE	(2)
29	SJT30443−V	Socket, J K	(1)
29	SJT30543−V	Socket, J F, D	(2)
29	SJT30643−V	Socket, J E	(1)
29	SJT30743−V	Socket, J H	(1)
29	SJT30943−V	Socket, J G	(1)
30	SGX7835	Cover	(1)
31	SGX7847−1	Filter	(1)
32	SWKSD225W−KM	Cord	(1)
33	SWKS362M1	Cord	(1)
34	SGX7836	Cover	(1)
SCREWS			
N1	XTV3+8F	Tapping, ⊕3×8	(4)
N3	XTV3+10JFR	Tapping, ⊕3×10	(11)
N4	XTV26+8JFR	Tapping, ⊕2.6×8	(1)
N6	XTV26+6J	Tapping, ⊕2.6×6	(1)
N8	XTW3+12QFR	Tapping, ⊕3×12	(2)
N9	XTB3+8J	Tapping, ⊕3×8	(5)
N11	XTB3+6FFR	Tapping, ⊕3×6	(4)
N12	SNE2125−1	Cabinet	(4)
N13	XTV3+12J	Tapping, ⊕3×12	(2)
N14	XTV26+8J	Tapping, ⊕2.6×8	(7)
PACKING PARTS			
P1 [EK]	SPG5689	Carton Box	(1)
P1 [other]	SPG5690	Carton Box	(1)
P2	SPS4705	Cushion (L)	(1)
P3	SPS4706	Cushion (R)	(1)
P4	SPS4753	Cushion (C)	(1)
P5	XZB50X65A02	Poly Bag	(1)
P6	SPS4734	Spacer	(1)

Printed in Japan
860408600 Ⓗ AH. TN. MS.